ORDER NO. AD9002025C9

Service Manual

Compact Disc Player

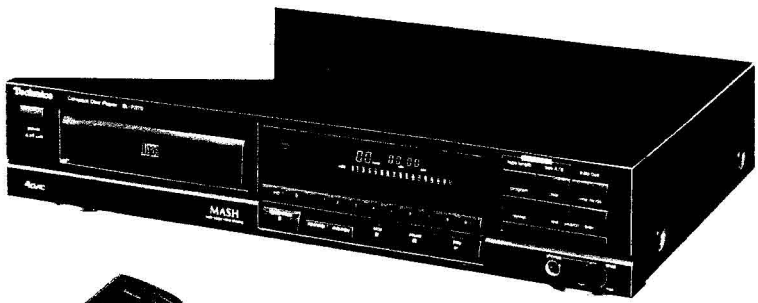
SL-P370

COMPACT disc DIGITAL AUDIO

DIGITAL

Color

(K)... Black Type



Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(GC)	Third Region.	(K)
(GN)	Oceania.	(K)
(PX)	Far East-PX.	(K)

SL-P333 MECHANISM SERIES (SIWD113-3ZA)

SPECIFICATIONS

■ Audio

No. of channels	2 (left and right, stereo)
Frequency response	2–20,000 Hz, ±1 dB
Output voltage	2 V (at 0 dB)
Dynamic range	96 dB
S/N ratio	96 dB
Total harmonic distortion	0.005% (1 kHz, 0 dB)
Harmonic distortion	0.003% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH* (4 DAC)
Output impedance	1 kΩ
Load impedance	More than 10 kΩ
Headphone output level	15 mW max. 32Ω (adjustable)

***MASH**

- MASH (Multi-Stage Noise Shaping) is an effective over-sampling D/A conversion technique which realizes a high S/N ratio and needs no highly complex manufacturing processes such as a laser trimming.
- MASH is a trademark of NTT (Nippon Telegraph and Telephone Corporation).

■ Pickup

Wavelength	780 nm

■ General

Power supply	
For Continental Europe:	AC 50/60 Hz, 220 V
For Oceania:	AC 50/60 Hz, 240 V
For others:	AC 50/60 Hz, 110 V/127 V/220 V/240 V
Power consumption	10 W
Dimensions (W×H×D)	430×88×284 mm
Weight	3.5 kg

Specifications subject to change without notice.
Weight and dimensions shown are approximate.

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Technics

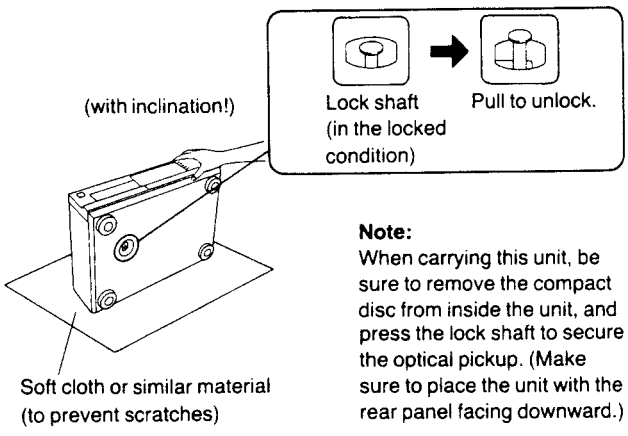
Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

Panasonic Tokyo Sales Department
Matsushita Electric Industrial Co., Ltd.
World Trade Center Bldg., 4-1, Hamamatsu-cho, 2-chome, Minato-ku, Tokyo 105, Japan

■ PLACEMENT

Before placement

The optical pickup is secured to prevent damage during transport. Be sure to release it before use.



Note:
When carrying this unit, be sure to remove the compact disc from inside the unit, and press the lock shaft to secure the optical pickup. (Make sure to place the unit with the rear panel facing downward.)

Notes of placement

■ **This unit is a precision instrument. Be sure to place it on a flat surface.**

■ **Avoid places such as the following:**

- Near any equipment or device that generates strong magnetism.
- On any heat-generating equipment or device, or in any place where the temperature is high (35°C or higher).
- Extremely cold places (5°C or below).
- Near a tuner or TV (It may cause noise in the broadcast, or disturbance of the TV picture.)

■ **When carrying or storing the unit, handle it with care so it is not subjected to any strong bumps.**
Always remove the disc before storing the unit for any period of time.

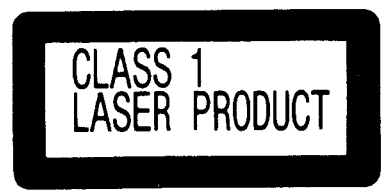
■ **To avoid problems due to vibration.**

- Do not place a book or similar object under this unit.
- Do not route the connection cables (of this or other units) across the operation panel, across the top, or under the unit.

■ CONNECTIONS

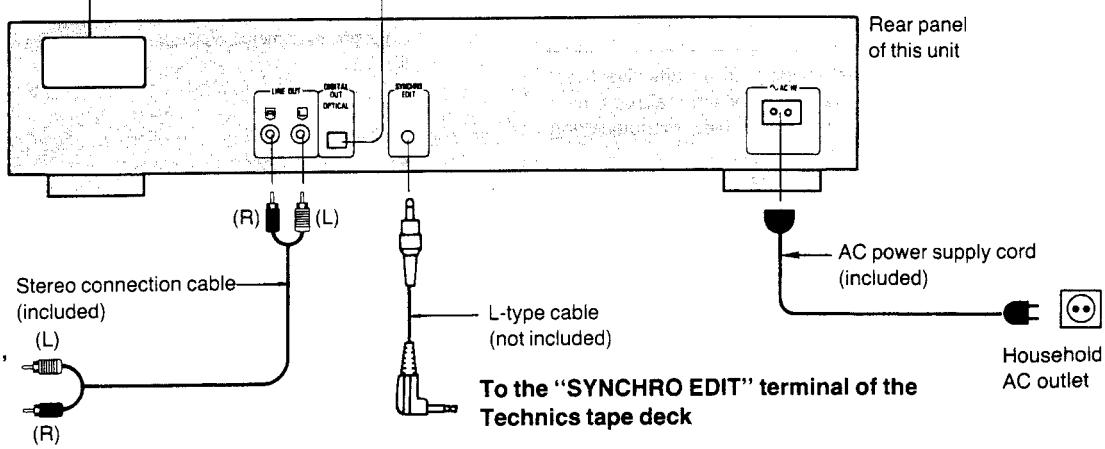
Turn power off on all components before making connections.

•Optical output terminal (DIGITAL OUT/OPTICAL)
This terminal can be used for connection with other equipment that has a digital input terminal, such as an amplifier, by using an optical cable (optional). A dust-protection cap is inserted in this terminal. Remove this cap only when a connection is to be made to this terminal. **(For Continental Europe)**



LUOKAN 1 LASERLAITE

Note:
The configuration of the AC outlet and AC power supply cord differs according to area.



Note:
Be sure to connect the stereo connection cable with the amplifier when using the synchro edit function even if the optical cable has been connected.

■ ACCESSORIES

- AC power supply cord 1
  [SJA187 (E)
  SJA173 (GN)
  RJA0004 (GC, PX)]
- Stereo connection cable 1
  (SJP2249-3)
- Remote control transmitter 1
  (RAK-SL3006E)
- Batteries 2
  (UM-4NE/2S)

■PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780nm
Maximum output radiation power from pick up: 100μW/VDE

Laser radiation from the pick up lens is safety level, but be sure the followings:

1. Do not disassemble the optical pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick up lens for a long time.

ACHTUNG: Dieses produkt enthält eine laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.

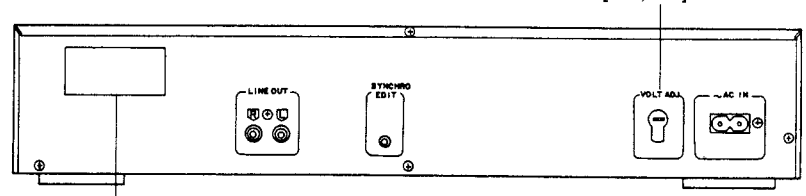
Wellenlänge: 780nm
Maximale strahlungsleistung der lasereinheit: 100μW/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

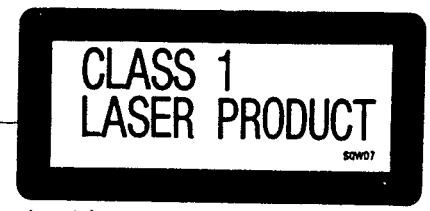
1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefährlich ist.
2. Den werksseitig justierten einstellregler der lasereinrelt nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.

ADVARSEL: I dette a apparat anvendes laser.

For [GC, PX] areas.



SQWD7



Obs:
Apparaten innehåller laser
Komponent av höger laserklass
än klass 1.

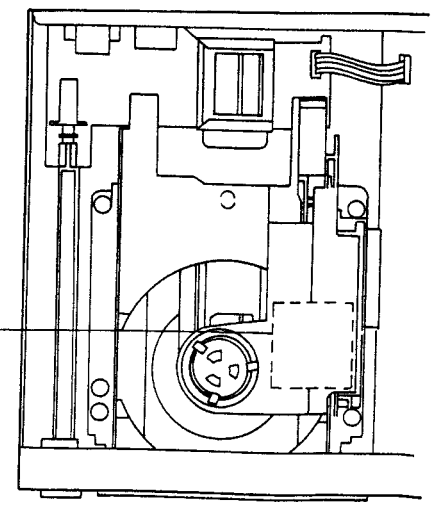
• Use of caution labels

Note: ○ Mark is used, × Mark is not used.

Areas	SQWD7	RQLS0021
(PX)	×	×
Others	○	○

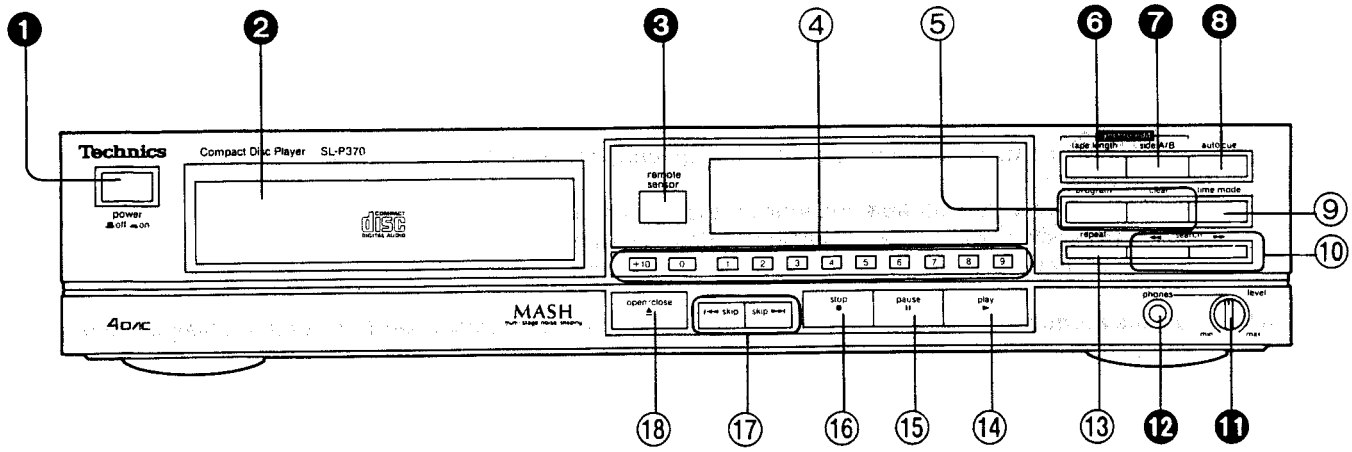
RQLS0021

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAF-BRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT-Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet. Nicht dem Strahl aussetzen.
RQLS0021
DANGER-Invisible laser radiation when open. AVOID DIRECT EX-POSURE TO BEAM.



LOCATION OF CONTROLS

The functions indicated by the black numbers (with white background, ④ etc.) can also be activated using the remote control transmitter.



Control section

❶ Power switch (power ▙off ▁on)

❷ Disc holder

❸ Remote control signal sensor (remote sensor)

④ Numeric buttons (+10, 0, 1~9)

⑤ Buttons for program function

•Programmed-play button (program)
Pressing this button initiates the programmed play mode. You can then enter specific tracks using the numeric buttons.

•Clear button (clear)
This button can be used to clear tracks from the programmed sequence one at a time.

❻ Edit tape length button (tape length)
When compact discs are to be recorded to tape, this button can be used to calculate the number of tracks that can be recorded on each side of the tape, depending on the length of the cassette tape used, so that as little tape as possible is wasted.

❼ Tape-side select button (side A/B)
When recording compact discs to tape, this button can be used to check the number of tracks and amount of tape left over for side A or B.

❽ Auto cue button (auto cue)
Pressing this button enables the unit to stop at the beginning of every track and switch to the play standby mode.

⑨ Time mode select button (time mode)

⑩ Search buttons (◀◀ search ▶▶)
These buttons can be used to move rapidly forward or backward on the disc during play. The search speed is slow when the button is pressed at first and becomes faster if the button is pressed and held continuously.

⓫ Headphones volume control (level)

> Avoid listening to music at high volume levels for extended periods of time.

⓬ Headphones jack (phones)

⑬ Repeat button (repeat)

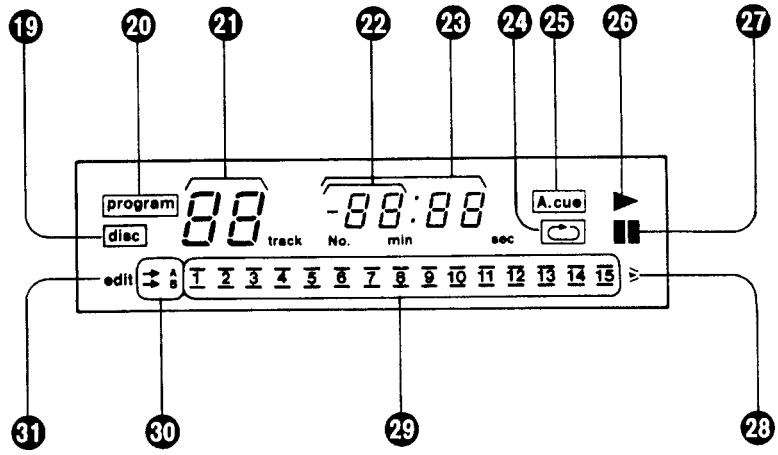
⑭ Play button (▶ play)

⑮ Pause button (❚❚ pause)

⑯ Stop button (■ stop)
This button can be used to stop disc play, as well as to cancel the various play modes.

⑰ Skip buttons (⏮ skip/skip ⏭)
These buttons can be used to skip by track in the forward or reverse direction.

⑱ Disc holder open/close button (▲ open/close)



Indicators section

⑲ Disc indicator (disc)

⑳ Program play indicator (program)

㉑ Track number display (track)

㉒ Program number display (No.)

㉓ Time display (min/sec)

㉔ Repeat play indicator ( )

㉕ Auto cue indicator (A. cue)

㉖ Play indicator (▶)

㉗ Pause indicator (❚❚)

㉘ "Over" mark (≥)
This indicator illuminates if the total number of tracks on the disc is 16 or more.

㉙ Track number indicator (1–15)

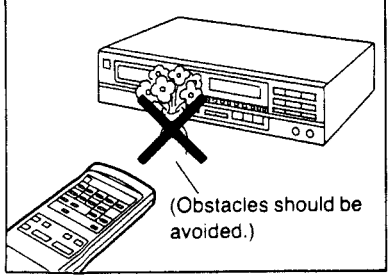
㉚ Tape side indicator (A/B)

㉛ Compact disc edit indicator (edit)

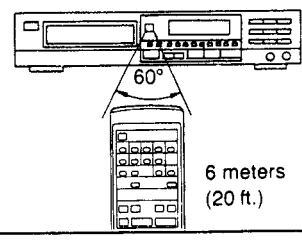
Remote control transmitter operation notes

Note that operation may not be correct if direct sunlight or other strong light strikes the remote control signal receptor part of this unit. If there is a problem, place the unit away from the direct sunlight or other strong light source.

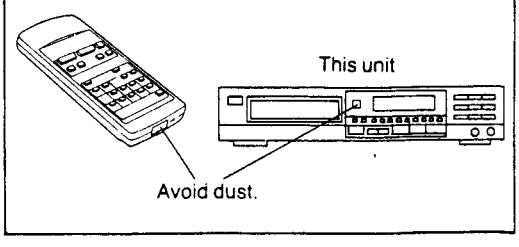
Face it toward the remote control signal receptor.



Use the remote control transmitter within 6 meters.



Be sure the transmitter part of the remote control transmitter and the receptor part of this unit are free from dust. Excessive dust might prevent reception.

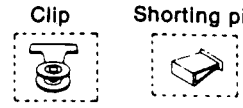


Notes:

- The control panel of the remote control transmitter may be covered by a clear plastic protective sheet. This sheet may be removed if desired.
- If this unit is installed in a rack with glass doors, the glass door's thickness or color might make it necessary to use the remote control transmitter a shorter distance from the unit.
- Do not use a remote control transmitter for a TV set, VCR or other component at the same time as this unit's remote control transmitter is being used, because this could result in an operation error.

■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

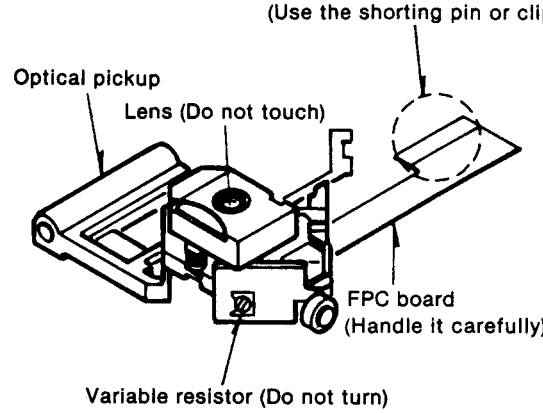
The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the optical pickup.



Be sure to short this position
(Use the shorting pin or clip.)

• Handling of optical pickup

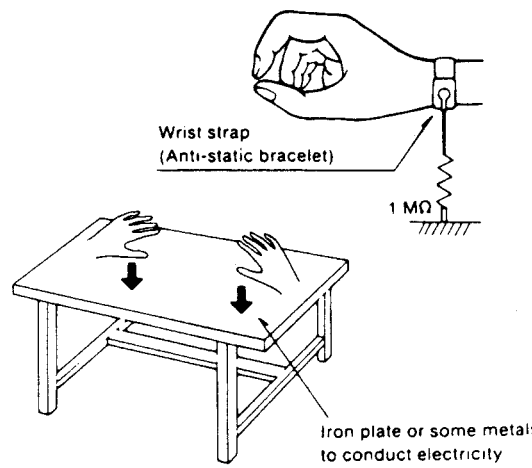
1. Do not subject the optical pickup to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. (FPC board)
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board. (FPC board)
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.



• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.

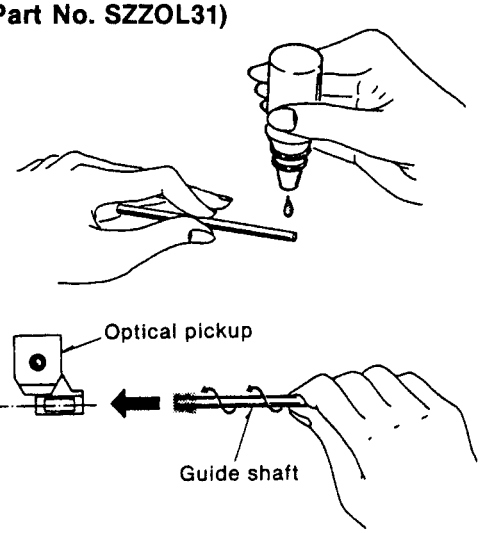


■ INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZOL31)

The container contains 6g (approx. 3ml) of oil.
One application (one shaft) uses 0.05ml of oil.

How to Use

(1) Remove the guide shaft in the traverse deck from the optical pickup and clean off any dust from the guide shaft.
(2) Apply one drop of the SZZOL31 to the tip of the guide shaft.
(3) Hold the guide shaft so that its oiled end touches the optical pickup and insert it into the bearing while rotating it slowly.
(4) After securing the guide shaft, move the optical pickup by hand several times to the left and right to distribute the oil on the guide shaft.



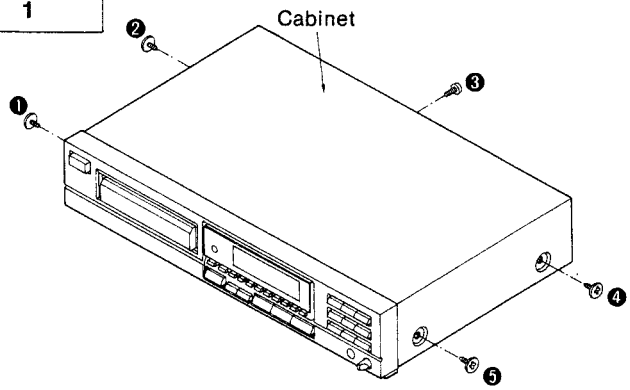
"ATTENTION SERVICER"
Some chassis components may have sharp edges. Be careful when disassembling and servicing.

■ DISASSEMBLY INSTRUCTIONS

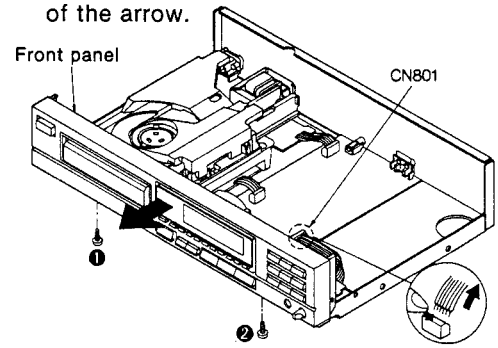
Warning: This product uses a laser diode. Refer to caution statements on page 3.

＊**This CD player is equipped with FPC board, so handle them with care during disassembly and reassembly.**

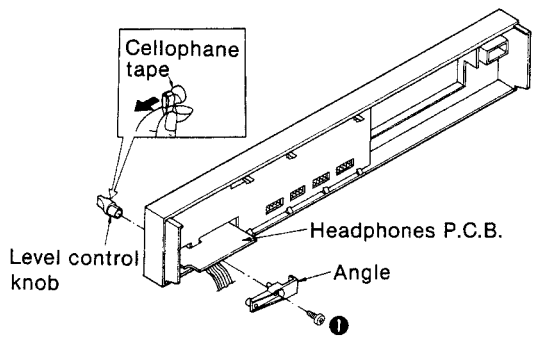
Ref. No. 1	**Removal of the cabinet**
Procedure 1	• Remove the 5 screws (❶~❺).



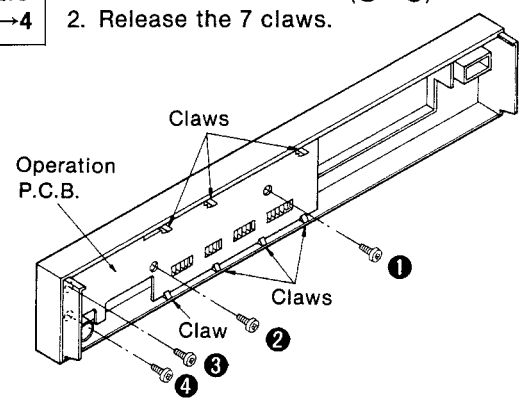
Ref. No. 2	**Removal of the front panel**
Procedure 1→2	1. Remove the 1 flat cable (CN801). 2. Remove the 2 screws (❶, ❷). 3. Remove the front panel in the direction of the arrow.



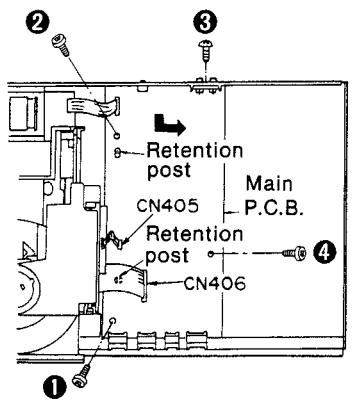
Ref. No. 3	**Removal of the head phones P.C.B.**
Procedure 1→2→3	1. Remove the level control knob. 2. Remove the 1 screw (❶). 3. Remove the angle.



Ref. No. 4	**Removal of the operation P.C.B.**
Procedure 1→2→3→4	1. Remove the 4 screws (❶~❹). 2. Release the 7 claws.

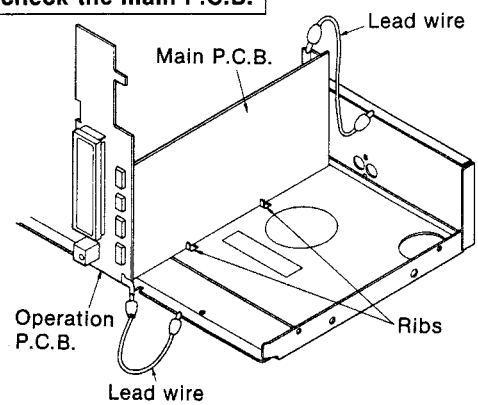


Ref. No. 5	**Removal of the main P.C.B.**
Procedure 1→2→3→5	



1. Remove the 2 flat cables (CN405, CN406).
2. Remove the 4 screws (❶~❹).
3. Lift the main P.C.B. off the retention posts on the chassis.
4. Remove the main P.C.B. in the direction of the arrow.

How to check the main P.C.B.

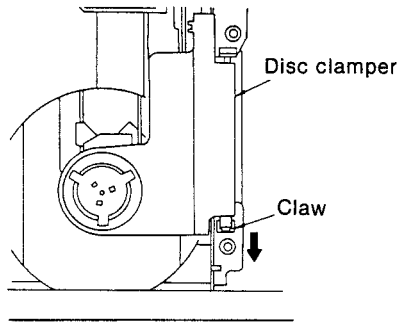


- When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown.
- Keep connect the 2 flat cables (CN405, CN406).

1. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire.
2. Connect the operation P.C.B. ground terminal to the chassis with a lead wire.

Ref. No. 6	Removal of the disc clamper

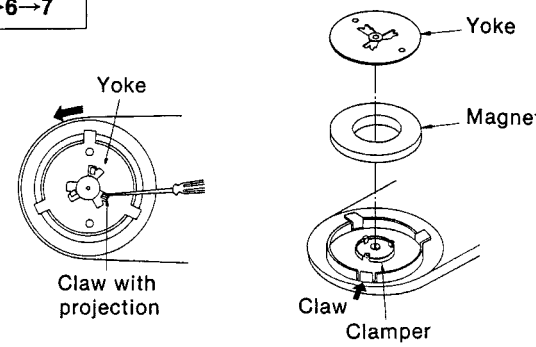
Procedure 1→6



- Push the claw in the direction of the arrow and remove the disc clamper.

Ref. No. 7	Removal of the magnet and clamper

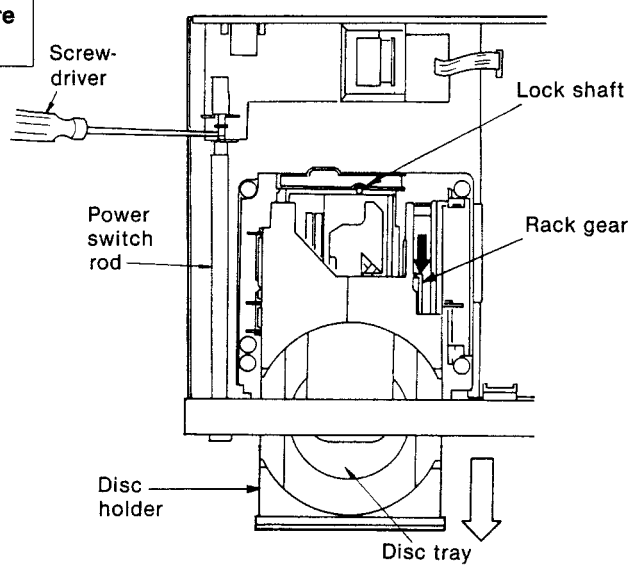
Procedure 1→6→7



1. While lifting the claw with a screwdriver, rotate clamper in the direction of the arrow and remove the yoke and magnet.
2. Release the claw of the clamper.

Ref. No. 8	Removal of the disc holder and power switch rod

Procedure 1→6→8



• Removal of the disc holder

1. Push the rack gear slowly in the direction of the arrow until the disc tray comes up.
2. Pull out slowly the disc holder.

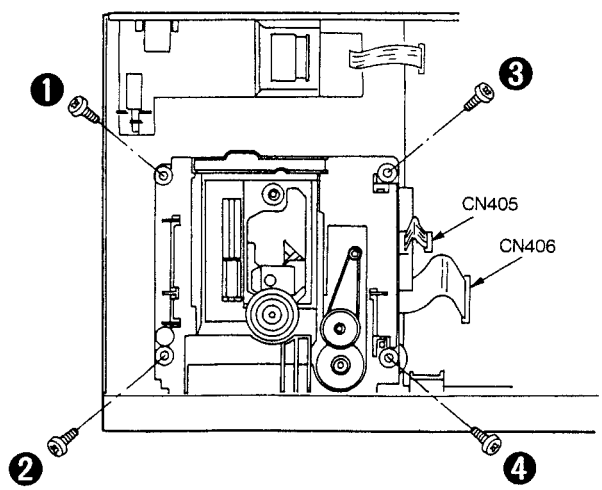
Note: Make sure to release the lock shaft (See page 3).

• Removal of the power switch rod

1. Set the power switch in the "OFF" position.
2. Remove the power switch rod by using a screwdriver.

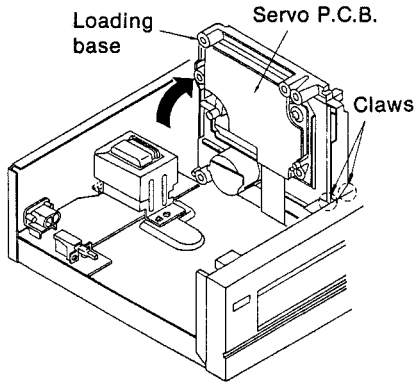
Ref. No. 9	Removal of the loading base

Procedure 1→6→8→9



1. Remove the 4 screws (❶~❹).
2. Remove the 2 flat cables (CN405, CN406).

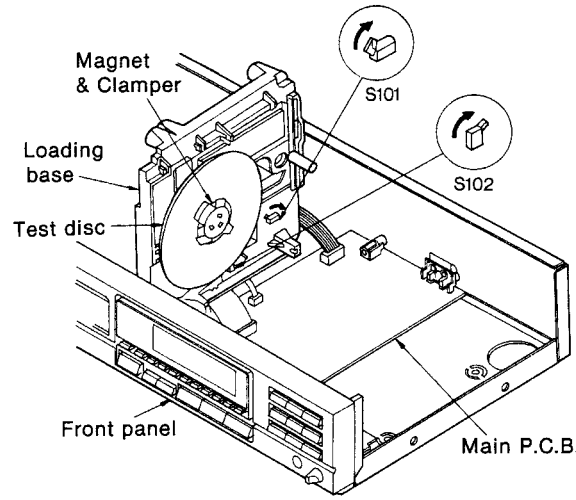
Ref. No. 10	How to check the servo P.C.B.
Procedure 1→6→8→9 →10	



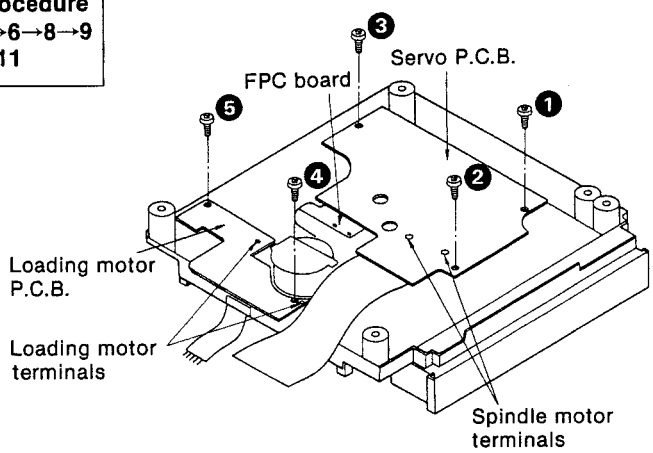
- When checking the soldered surface of the servo P.C.B. and replacing the parts, do as shown.
- Keep connect the 2 flat cables (CN405, CN406).

How to play the disc

1. Place the test disc and magnet on the turntable.
2. Switch the player ON.
3. First push the open/close switch (S102) and next, push the S101.
4. After the test disc starts rotating, release the open/close switches (S101, S102).



Ref. No. 11	Removal of the servo P.C.B. and loading motor P.C.B.
Procedure 1→6→8→9 →11	



• Removal of the servo P.C.B.

1. Remove the 3 screws (❶~❸).
2. Unsolder the 2 terminals of spindle motor.
3. Remove the FPC board from the optical pickup.

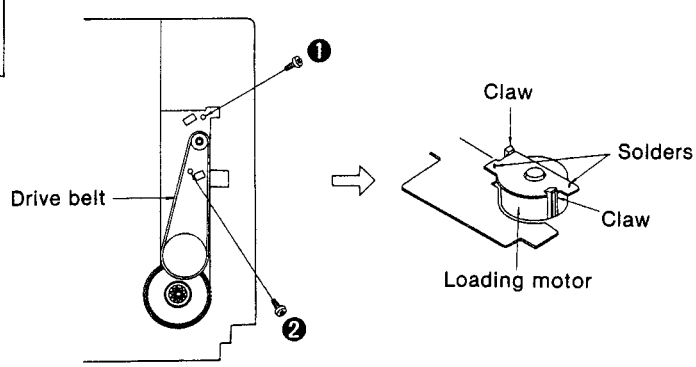
Caution:

To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board.

• Removal of the loading motor P.C.B.

1. Remove the 2 screws (❹, ❺).
2. Unsolder the 2 terminals of loading motor.

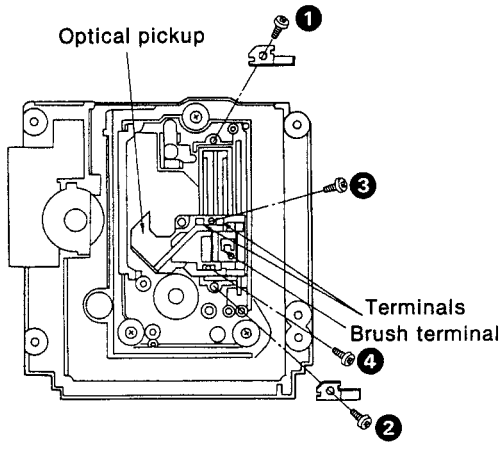
Ref. No. 12	Removal of the loading motor
Procedure 1→6→8→9 →12	



1. Remove the drive belt.
2. Remove the 2 screws (❶, ❷).
3. Release the 2 claws.
4. Unsolder the 2 terminals of the lead wire of the loading motor.

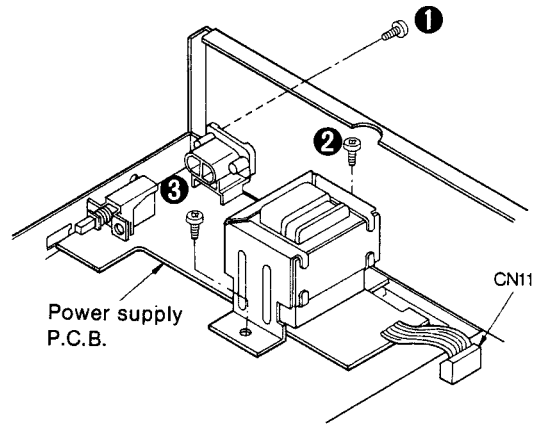
Ref. No. 13	Removal of the optical pickup
Procedure 1→6→8→9 →11→13	**Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 6).**

1. Remove the 2 screws (❶, ❷).
2. Unsolder the 2 terminals and the 2 screws (❸, ❹).



Caution: Take care not to touch the brush terminal.

Ref. No. 14	Removal of the power supply P.C.B.
Procedure 1→6→8→14	



1. Remove the 3 screws (❶~❸).
2. Remove the flat cable (CN11).

Ref. No. 15	Removal of the spindle motor
Procedure 1→6→8→9 →11→15	

1. Loosen the screw (❶) by using a 1.27mm allen wrench and remove the turntable.
2. Remove the 2 screws (❷, ❸).

Caution:

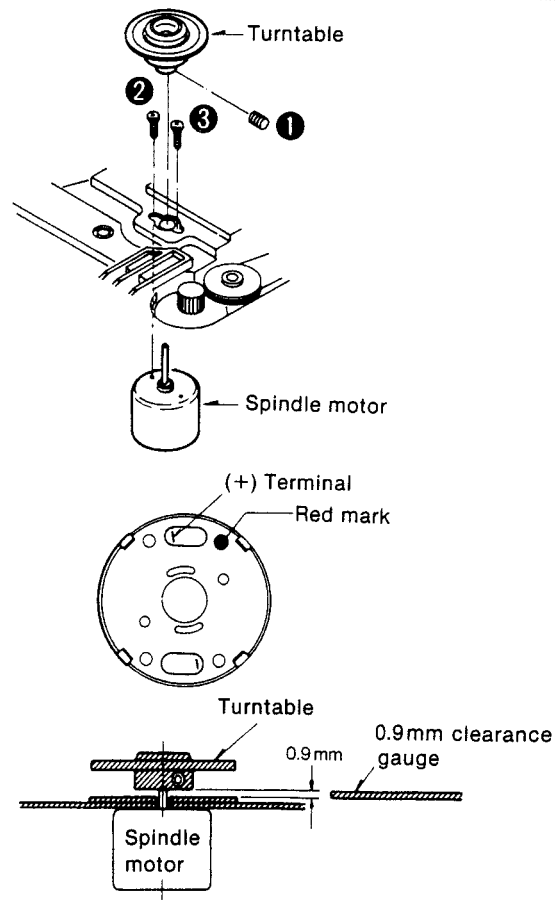
1. Turntable height adjustment is necessary any time the turntable or spindle motor is replaced.
2. The (+) terminal of the spindle motor is indicated by the red mark.

Adjustment of turntable height

1. Insert a 0.9mm clearance gauge (RZZ0297) between the turntable and loading base as shown right.
2. Tighten the turntable set-screw by using a 1.27mm allen wrench.

Caution:

Refer to turntable height adjustment (see page 12).



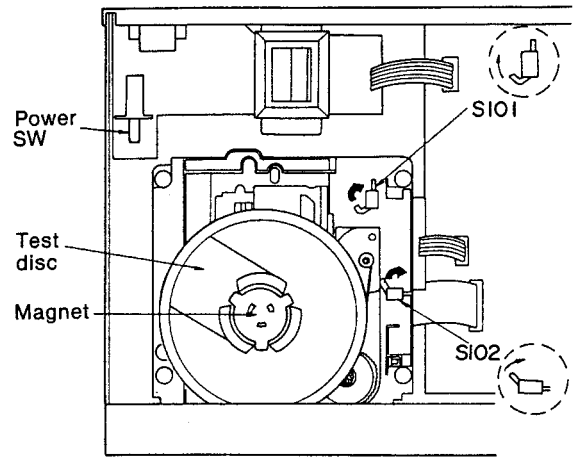
■ MEASUREMENTS AND ADJUSTMENTS

Caution:

- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens. Avoid exposure to the laser beam, especially when performing adjustments.

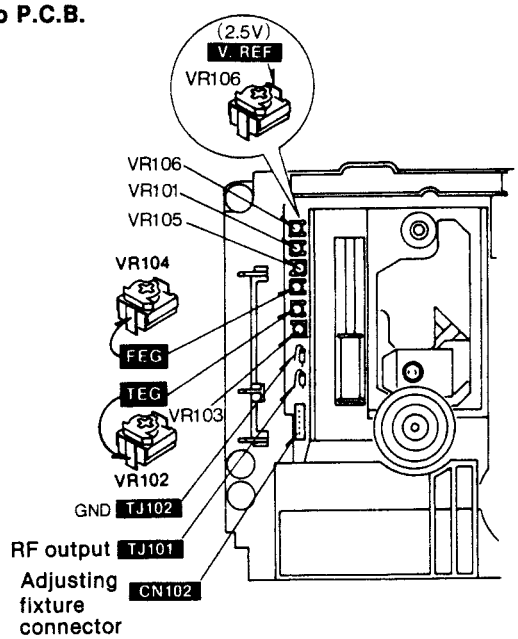
PREPARATION

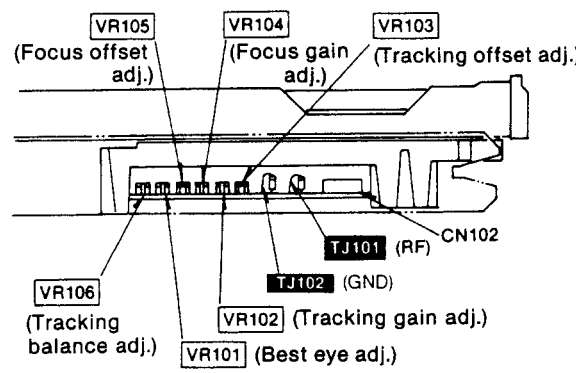
1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
2. Remove the disc clamper and magnet (see Ref. No. 6, 7 of the same).
3. Remove the disc holder and power switch rod (see Ref. No. 8 of the same).
4. Place the test disc and magnet on the turntable.
5. Switch the player on.
6. First push the Open/Close switch S102 in the direction of the arrow and then, push switch S101 in the direction of the arrow as shown in the figure.



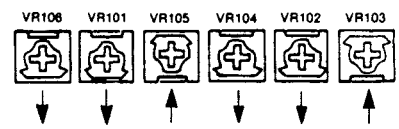
ADJUSTMENT POINTS

- **Servo P.C.B.**





- **Temporary setting of each VR**



Temporary VR setting if any of the trimmer VRs are replaced or require readjustment, temporarily set them to the following positions.

Measuring Instruments and Special Tools

* Servo gain adjuster (SZZP1017F or SZZP1094C-1)
* Test discs
1. Playability test disc (SZZP1054C or SZZP1014F)
2. Uneven test disc (SZZP1056C)
3. Black band test disc (SZZP1057C)
* Normal disc
* Dual-beam oscilloscope with bandwidth of 30 MHz or better (with EXT trigger and 1 : 1 probe).
* Audio frequency (AF) osillator
* Comversion connector (SZZP1032F)
* Allen wrench (M2.0) (SZZP1101C)
* Allen wrench (M1.27)
* 0.9mm clearance gauge (RZZ0297)
* Filter

Perform adjustments depend on the part to be replaced according to followings:

(1) Spindle motor ..... Items (1), (3) to (8)
(2) Turntable ..... Items (1), (3) to (8)
(3) Optical pickup ..... Items (2) to (8)

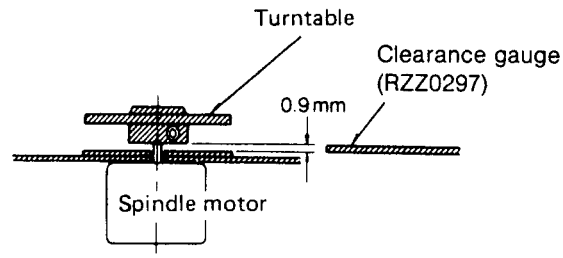
Adjusting Procedure

* If you have replaced the optical pickup, spindle motor, or turntable, do the following adjustment:

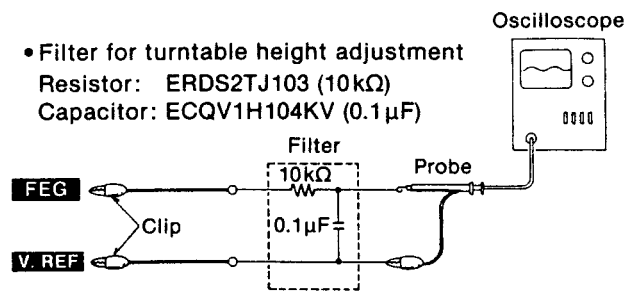
(1) TURNTABLE HEIGHT ADJUSTMENT

1. Insert the 0.9 mm clearance gauge (RZZ0297) between the turntable and the loading base (see the figure at right).
2. Tighten the turntable retention screw with the 1.27 mm allen wrench.
3. Connect the oscilloscope's CH. 1 probe across VR104's **FEG** (+) and VR106's **V. REF** (−) terminals via a filter.
   (Note: A voltage of 2.5V appears at the V. REF terminal. Take care not to short the player's chassis to the oscilloscope ground.)
   Oscilloscope setting: VOLT ..... 50 mV
   SWEEP ..... 1 ms.
   Input coupling ... DC
4. Adjust oscilloscope's DC zero balance.
5. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
6. Measure the voltage amplitude of the signal on the oscilloscope.

Note 1. If the measured amplitude is within a range of +/− 15 mV, the turntable height is correct. If it is outside this range, adjust the turntable height by using the clearance gauge as a pry.
If the amplitude exceeds +15 mV, lower turntable.
If the amplitude is below −15 mV, elevate the turntable.

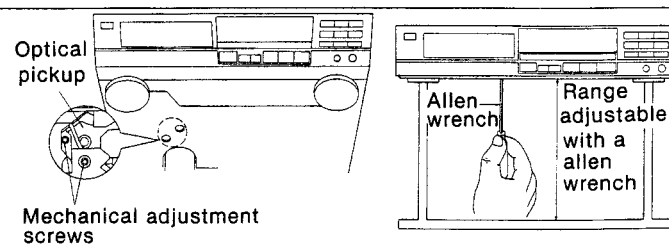


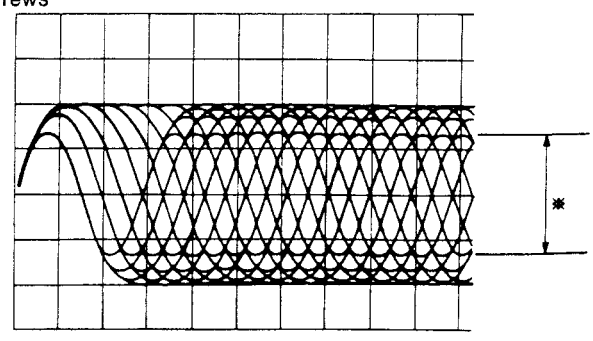
Note 2. If the measured amplitude greatly surpasses or falls short of the range above, set **VR105** at or around the center, then try to adjust the height again. (Then be sure to adjust the focus offset as well.)



(2) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B.
   Oscilloscope setting: VOLT ..... 100 mV
   SWEEP ..... 0.5 μs.
   Input coupling ... AC
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1056C). (Playing any other track may yield a false adjustment.)
3. Leave the player in Play mode, and place it as shown in the figure on the right.
4. Alternately adjust the two mechanical adjusting screws with the 2.0mm allen wrench (SZZP1101C) until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.
5. After completing the adjustment, lock the **mechanical adjustments** with lock paint (RZZOL01).

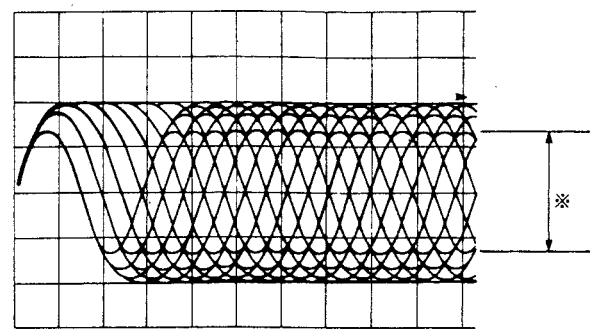




※ Most stretched eye pattern.

(3) BEST EYE (PD BALANCE) ADJUSTMENT

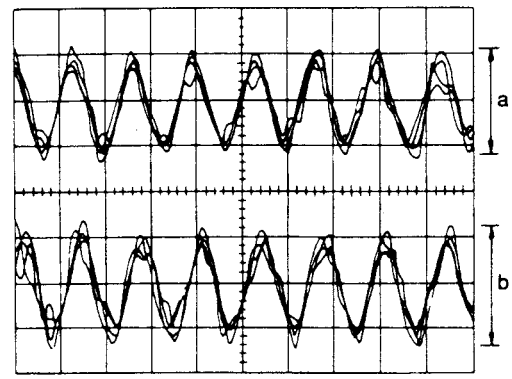
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B.
   Oscilloscope setting: VOLT . . . . . 100 mV
   SWEEP . . . . . 0.5 μ s
   Input coupling . . . AC
2. **Switch the player power ON, and play the 1kHz (track 1) on the test disc (SZZP1054C).**
3. **Adjust VR101 until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.**



※ Most stretched eye pattern.

(4) FOCUS GAIN ADJUSTMENT

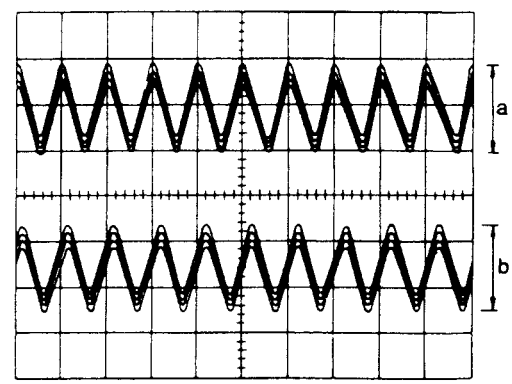
1. Connect the servo gain adjuster to the player (see page 15).
2. Set the servo gain adjuster's gain switch to position "2" and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825Hz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
4. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
   Oscilloscope setting: VOLT . . . . . 100 mV (both channels)
   SWEEP . . . . . 0.2 ms.
   Input coupling . . . AC
5. Play the test disc (SZZP1014F or SZZP1054C).
6. Set the servo gain adjuster's gain switch to position "3", and you will see a 825 Hz signal on the oscilloscope. Adjust **VR104** until the signal amplitudes on both channels become identical to each other.
7. Set the gain switch back to position "2".



※ Adjust **VR104** until a equals b.

(5) TRACKING GAIN ADJUSTMENT

1. Set up the AF oscillator output for **1.1 kHz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
   Oscilloscope setting: VOLT . . . . . 100 mV (both channels)
   SWEEP . . . . . 0.2 ms.
   Input coupling . . . AC
3. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
4. Set the servo gain adjuster's gain switch to position "1", and you will see a 1.1 kHz signal on the oscilloscope. Adjust **VR102** until the signal amplitudes on both channels become identical to each other.
5. Set the gain switch back to position "2".

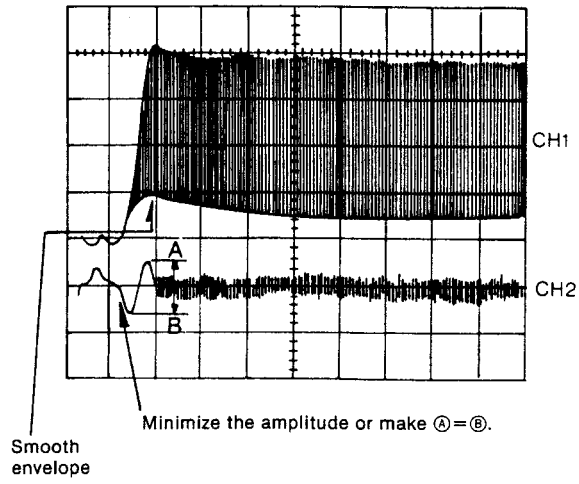


※ Adjust **VR102** until a equals b.

(6) FOCUS OFFSET ADJUSTMENT

Note: Make sure that the servo gain adjuster's gain switch is set to position "2".

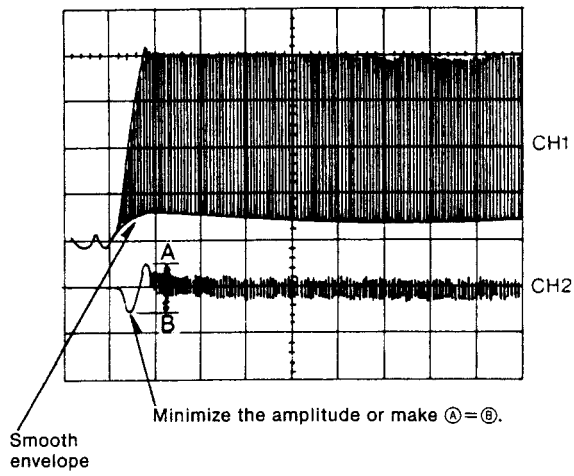
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B. and its CH. 2 probe (+) to VR104's **FEG** terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP. . . . . .0.2 ms.
   Input coupling. . . AC (both CH. 1 and 2)
   Trigger mode . . . .NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR105** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(7) TRACKING OFFSET ADJUSTMENT

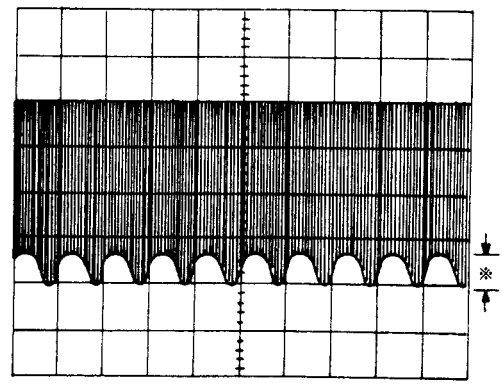
Note: Make sure that the servo gain adjuster's gain switch is set to position "2".

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B., and its CH. 2 probe (+) to VR102's **TEG** terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP. . . . . .0.2 ms.
   Input coupling. . AC (both CH. 1 and 2)
   Trigger mode. . . NORM (trigger CH. 1.)
2. Switch the player power **ON**, and play track **9** on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR103** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



(8) TRACKING BALANCE ADJUSTMENT

1. Make sure that the servo gain adjuster's gain switch is set to position "2".
2. Set up the AF oscillator output for **1.1 kHz, 600 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
3. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B. and CH. 2 probe (+) to the OSC terminal on the servo gain adjuster.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   200 mV (CH. 2)
   SWEEP. . . . . .0.1 ms.
   Input coupling. .AC (both CH. 1 and 2)
   Trigger mode . . .NORM (trigger CH. 2)
4. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
5. Set the servo gain adjuster's gain switch to position "1", and adjust **VR106** so that the wafveform of the output section marked with ※ is balanced.
6. Disconnect the servo gain adjuster's leads from the player.



※ This section of the waveform must be balanced.

(9) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

* **Checking Skip Search**

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

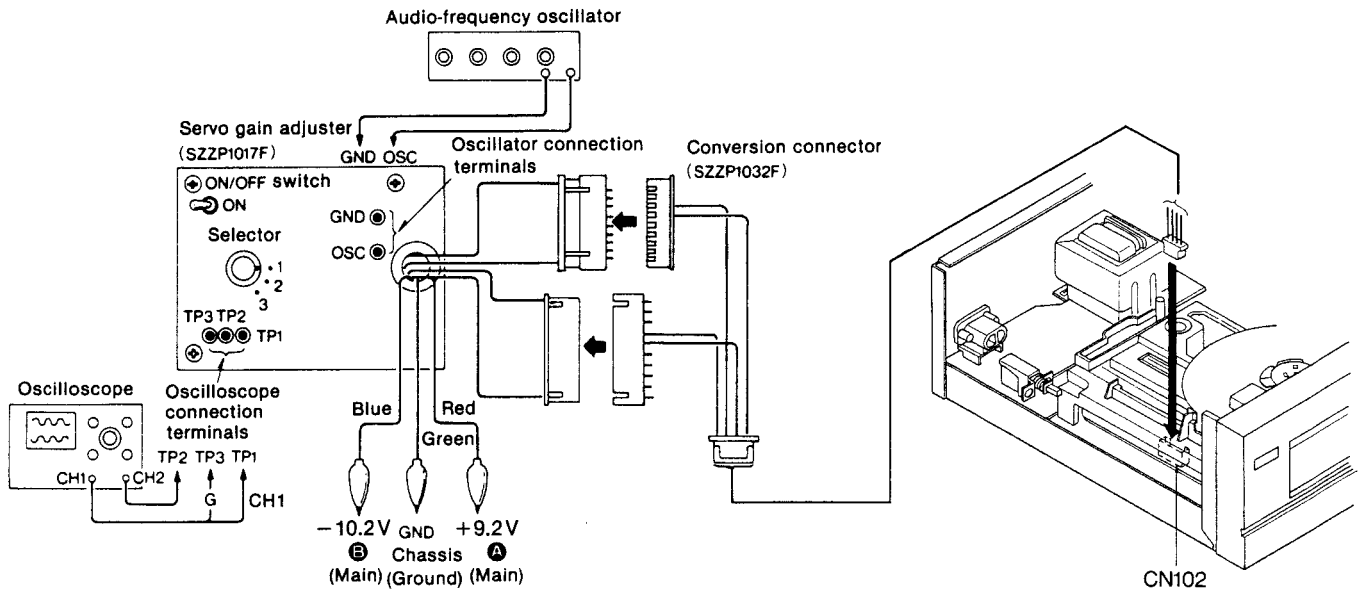
* **Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

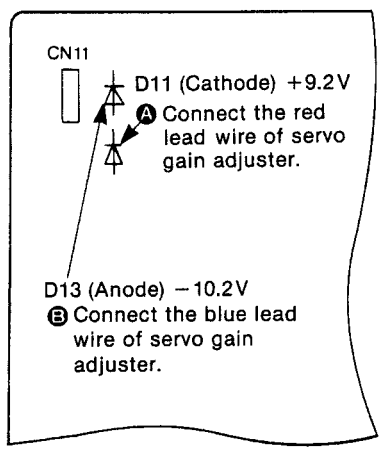
* **Checking Using Defect Disc**

1. Play the 0.7 mm black dot and the 0.7 mm wedge on the defect test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc and verify that no sound skip or noise occurs.

• **Connection of servo gain adjuster**



• **Main P.C.B.**


CN11
D11 (Cathode) +9.2V
Ⓐ Connect the red lead wire of servo gain adjuster.
D13 (Anode) −10.2V
Ⓑ Connect the blue lead wire of servo gain adjuster.

■ NEW SERVO GAIN ADJUSTER (Servo Amp. Adjusting Fixture)

The following introduces the improved version of the current servo gain adjuster (SZZP1017F):

Part number: SZZP1094C-1

Features:

(1) Contains all oscillation frequencies and output adjustments needed for focus servo gain, tracking servo gain, and tracking balance adjustment (requires no external oscillator).
(2) Panel indicators indicate the best points of focus and tracking servo gains (no oscilloscope needed).
(3) Internal power supply eliminates the need for power supply from the CD player.

■ TERMINAL FUNCTION OF IC'S

• IC101 (AN8373S): Servo amp.

Pin No.	Mark	I/O Division	Function
1	AMP1	I	RF signal input (X30 amp.)
2	PDAD	I	Photo detector current input (A2)
3	PDA	I	Photo detector current input (A1)
4	PDBD	I	Photo detector current input (A4)
5	PDB	I	Photo detector current input (A3)
6	LPD	I	Non-inverting laser power input
7	LD	O	Laser power auto control output
8	FBL1	I	PD balance adjustment
9	FBL2	I	
10	TBL1	I	Tracking balance adjustment
11	TBL2	I	
12	FOOFS	I	Focus offset adjustment
13	IVA	O	Current/voltage conversion output (A)
14	IVB	O	Current/voltage conversion output (B)
15	FE	O	Focus gain adjustment output
16	FPI	I	Focus error signal input
17	TPI	I	Tracking error signal input
18	C. TPL	I	Tracking error filter capacitor input
19	C. TPH		
20	C. FPL	I	Focus error filter capacitor input
21	C. FPH		

Pin No.	Mark	I/O Division	Function
22	TPO	O	Tracking error signal output
23	FPO	O	Focus error signal output
24	FGC	I	Focus gain up signal input (Not used, connected to GND)
25	TGC	I	Tracking gain up signal input (Not used, connected to GND)
26	GD	I	Focus/Tracking down signal input (Not used, connected to GND)
27	PTO	O	Position detecting amp. output
28	PTI	I	Position detecting amp. input
29	PBO	O	Position detecting buffer output
30	POT	I	Position detecting buffer input
31	BDO	O	Dropout detection output
32	$\overline{\text{RFDET}}$	O	RF detection signal output
33	SDO	O	Dropout detection pulse output
34	C. SBDO	I	Dropout detecting capacitor input
35	ARF	O	RF signal output
36	C. AGC	I	AGC detecting capacitor input
37	VCC	I	Power supply
38	LDON	I	Laser power control input
39	RF IN	I	RF signal input
40	AMPO	O	RF signal output
41	VREF	O	Reference voltage output
42	GND	—	Ground terminal

• IC402 (MN1550PEB): Remote control signal processor

Pin No.	Mark	I/O Division	Function
1	VDD	I	Power supply
2	OSC1	I	Clock input
3	OSC2	——	(Not used, open)
4	P22	——	(Not used, open)
5	RST	I	Reset signal input
6	P21	——	(Not used, open)
7	P20	I	Remote control signal input

Pin No.	Mark	I/O Division	Function
8	IRQ	I	Program enable/de-enable control
9	P31	O	(Not used, open)
10 ⟆ 13	P10 ⟆ P13	I	Key scan data signal input
14 ⟆ 17	P00 ⟆ P03		
18	VSS	——	GND terminal

• IC102 (AN8374S): Servo processor

Pin No.	Mark	I/O Division	Function
1	LSA	I	Phase difference input (A)
2	LSB	I	Phase difference input (B)
3	TEOFS	O	Tracking offset adjustment
4	TE	O	Tracking gain adjustment
5	TEG	I	
6	TE OUT	O	Tracking error signal output
7	TE BPF	I	Tracking error gain detecting filter (Not used, open)
8	FEG	I	Focus gain adjustment
9	FE OUT	O	Focus error signal output
10	CLW	O	Triangular wave oscillator capacitor output
11	VREF	I	Reference voltage input
12	ARF	I	RF signal input
13	CDSL	I	Data slice filter capacitor input
14	FPC	I	Frequency difference signal input
15	GND	—	Ground terminal
16	C. PLL	I	PLL loop filter constant
17	VSS	—	Ground terminal
18	CLK	I	Frequency pull-in clock signal (88.2 kHz) input
19	SRF	O	Sliced and digitized RF signal output
20	PCK	O	Clock output extracted from SRF
21	EFM	O	EFM signal output synchronous with PCK

Pin No.	Mark	I/O Division	Function
22	VDD	I	Power supply
23	SPCNT	O	Track crossing speed control output output (Not used, open)
24	SENSE	O	Selector output (track crossing state)
25	TRV	O	Traverse servo control output
26	$\overline{\text{FLOCK}}$	O	Focus lock signal output
27	KICK	O	Track kick signal output
28	LDON	O	Laser power control output
29	VDET	O	Focus/tracking gain up output (Not used, open)
30	CNT1	I	Control input (FOON: Focus Servo On signal)
31	CNT2	I	Control input (TRON: Tracking Servo On signal)
32	CNT3	I	Control input (KICKF: Kick Direction (Forward) command)
33	CNT4	I	Control input (KICKR: KICK Direction (Backward) command)
34	TRVF	I	Traverse forward command signal
35	TRVR	I	Traverse backward command signal
36	$\overline{\text{RFDET}}$	I	RF detection signal input
37	BDO	I	Dropout detection input
38	VCC	I	Power supply
39	TVPO	O	Traverse position detecting resistor/capacitor inputs
40	TVPI	I	
41	BROUT	O	Tracking drive control output
42	BRIN	I	Tracking error signal input

• IC103 (AN3877N): BTL drive

Pin No.	Mark	I/O Division	Function
1	PVCC	I	Drive power supply
2	VCC	I	Power supply
3	TB	O	External transistor base driving output
4	VMON	O	Voltage output
5	TVDI	I	Traverse error signal input
6	FDI	I	Focus error signal input
7	TDI	I	Tracking error signal input
8	VREF	I	Reference voltage input

Pin No.	Mark	I/O Division	Function
9	TD−	O	Inverting output of tracking driver
10	TD+	O	Non-inverting output of tracking driver
11	FD−	O	Inverting output of focus driver
12	FD+	O	Non-inverting output of focus driver
13	TVD−	O	Inverting output of traverse driver
14	TVD+	O	Non-inverting output of traverse driver
15	$\overline{\text{RESET}}$	O	Reset signal output
16	PC	I	PC input (connect to GND.)

• IC301 (MN6625): Digital signal processor

Pin No.	Mark	I/O Division	Function
1	BYTCK	O	Serial data byte clock (Not used, open)
2	FCLK	O	Crystal frame clock (7.35kHz) (Not used, open)
3	DEMPH	O	De-emphasis ON signal (de-emphasis ON at "H")
4	SRDATA	O	Serial data output (MSB first)
5	SCK	O	Serial bit clock output
6	LRCK	O	LR discrimination signal output
7	WDCK	O	Serial data output word clock
8	LDG	O	L channel deglitch signal (Not used, open)
9	RDG	O	R channel deglitch signal (Not used, open)
10	IPFLAG	O	Interpolation flag (interpolation at "H")
11	FLAG	O	Error flag terminal
12	XCK	O	Clock (16.9344MHz) output (Not used, open)
13	TEST	I	Test mode selection (Not used, connected to power supply.)
14	TX	O	Digital signal output (Not used, open)
15	SLEEP	I	Mode selector ("L": normal, "H": SLEEP mode) (Not used, connected to GND)
16	CSEL	I	Test terminal ("L": normal) (Not used, connected to GND)
17	X1	I	Clock input (16.9344MHz)
18	X2	O	Clock output (16.9344MHz) (Not used, open)
19	VSS	—	GND terminal
20	BLKCK	O	Sub-code block (Q data) clock (75Hz)
21	$\overline{\text{CLDCK}}$	O	Sub-code frame (Q data) clock (7.35kHz)
22	$\overline{\text{SUBQ}}$	O	Sub-code (Q data) output
23	$\overline{\text{RST}}$	I	Reset signal input (reset at "L")
24	MLD	I	Command load signal input

Pin No.	Mark	I/O Division	Function
25	MCLK	I	Command clock signal input
26	MDATA	I	Command data input
27	DMUTE	I	Muting control
28	$\overline{\text{TRON}}$	I	Tracking servo ON signal (tracking servo ON at "L")
29	STAT	O	Processing condition (CRC, CUE, CLVS, TT STOP, FCLV)
30	SUBC	O	Sub-code serial output data (Not used, open)
31	SBCK	I	Clock for sub-code serial output (Not used, open)
32	SMCK	O	Clock output (4.2336MHz)
33	VDD	I	Power supply
34	MEMP	I	Emphasis signal input (Not used, open)
35	FG	I	Spindle motor FG signal input (Not used, open)
36	PC	O	Spindle motor ON signal (ON at "L")
37	EC	O	Spindle motor drive signal
38	RESY	O	Resynchronizing signal (Not used, open)
39	DO	I	Drop-out signal (Drop-out at "H")
40	SRF	I	EFM signal input (DSL)
41	EFM	I	EFM signal input (PLL)
42	PCK	I	PLL extract clock input (4.3218MHz)
43	FPC	O	PLL frequency comparision signal
44 ∫ 51	D7 ∫ D0	I/O	16K RAM data input/output
52	RAM/OE	O	16K RAM $\overline{\text{OE}}$ signal
53	RAM/WE	O	16K RAM $\overline{\text{WE}}$ signal
54 ∫ 64	RAM/A0 ∫ RAM/A10	O	16K RAM address signal (RAMA0: LSB, RAMA10: MSB)

• IC401 (MN15283PJG-3): System control & FL drive

Pin No.	Mark	I/O Division	Function
1	CLOSE SW	I	Disc holder "Close" detection
2	DECK IN	I	Synchro edit control input
3	NC	——	Not connected
4			
5	RST	I	Reset signal input
6	BLKCK	I	Sub-code block (Q data) clock input (75 Hz)
7 ⟆ 10	P50 ⟆ P53	I	Key scan data signal input
11	CLDCK	I	Sub-code block (Q data) clock input (7.35 kHz)
12	SUBQ	I	Sub code (Q data) input
13	CLOSE	O	Loading motor "Close" command
14	OPEN	O	Loading motor "Open" command
15	TRVR	O	Traverse "Reverse" command signal
16	TRVF	O	Traverse "Forward" command signal
17	CNT4	O	Optical servo IC control signal (KIKCR: Kick direction [Reverse] command)
18	CNT3	O	Optical servo IC control signal (KICKF: Kick direction [Forward] command)
19	CNT2	O	Optical servo IC control signal ($\overline{\text{TRON}}$: Tracking servo)
20	CNT1	O	Optical servo IC control signal ($\overline{\text{FOON}}$: Focus servo)
21	STAT	I	Processing status input from signal processor LSI

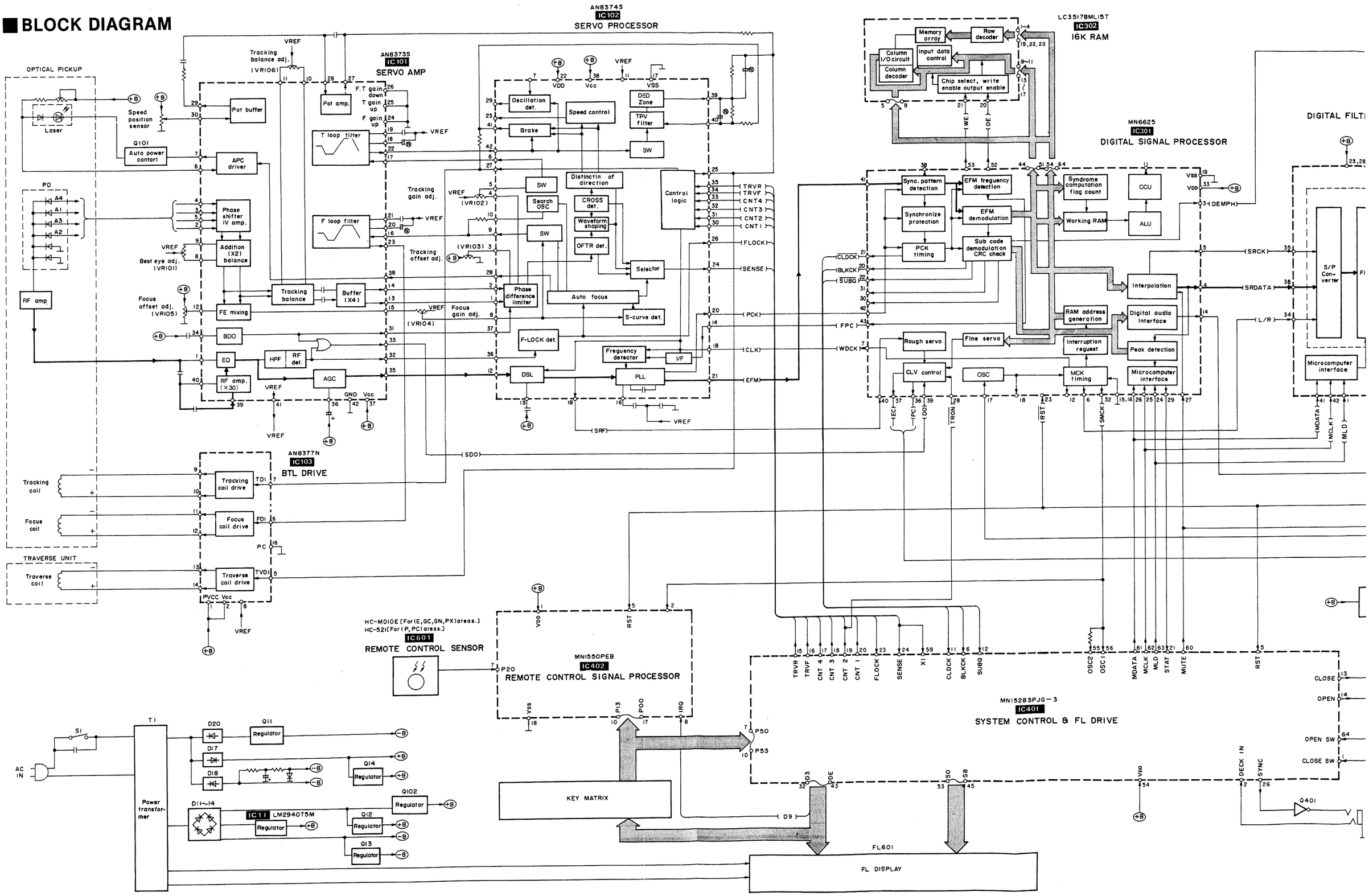
Pin No.	Mark	I/O Division	Function
22	NC	——	Not connected
23	FLOCK	I	Optical servo condition (focus) input
24	SENSE	I	Optical servo condition (Track cross) input
25	NC	——	Not connected
26	SYNC	O	Synchro edit control output
27	DAC	O	(Not used, open)
28	VPP	I	FL drive power supply
29 ⟆ 44	D0 ⟆ DF	O	FL glid signal and key scan data signal
45 ⟆ 53	S8 ⟆ S0	O	FL anode signal
54	VDD	I	Power supply
55	OSC2	I	Clock input (4.2336 MHz)
56	OSC1		
57	VSS	——	GND terminal
58	XO	——	Clock terminal (Not used, open)
59	XI	I	Optical servo condition (Track cross) input
60	MUTE	O	Muting control output
61	MDATA	O	Command data output
62	MCLK	O	Command clock output
63	MLD	O	Command load output
64	OPEN SW	I	Disc holder "Open" detection

• IC801 (MN6474): Digital filter & D/A converter

Pin No.	Mark	I/O Division	Function
1	MLD	I	Command load input (load: L)
2	RSTB	I	Reset command
3	IE	I	Not used, connected to GND
4	TP1	O	TEST terminal
5	TP2		
6	TEST1	I	TEST terminal 1 (connected to GND)
7	TEST2	I	TEST terminal 2 (connected to GND)
8	NC	——	Not connected
9			
10	AVDD4	I	Power supply
11	L (−)	O	Lch data output, (−) terminal
12	AVSS4	——	GND terminal
13	AVSS3		
14	L (+)	O	Lch data output, (+) terminal
15	AVDD3	I	Power supply
16	NC	——	Not connected
17	AVDD2	I	Power supply
18	R (+)	O	Rch data output, (+) terminal
19	AVSS2	——	GND terminal (analog system)
20	AVSS1	——	
21	R (−)	O	Rch data output, (−) terminal
22	AVDD1	I	Power supply

Pin No.	Mark	I/O Division	Function
23	DVDD1	I	Power supply
24	DVSS1	——	GND terminal (digital system)
25	X2	O	Clock output
26	X1	I	Clock input
27	NC	——	Connected to GND
28	DVDD2	I	Power supply
29	DVSS2	——	GND terminal (digital system)
30	NSUB	I	Sub-strate terminal (Not used, connected to power supply)
31	768fs	O	768fs (33.8688MHz) (Not used, open)
32	192fs	O	192fs (8.4672MHz) (Not used, open)
33	LRPOL	——	LR clock selector (Not used, connected to power supply)
34	L/R	I	LR discrimination signal input
35	SRCK	I	Serial bit clock input
36	SRDATA	I	Serial data input (MSB first)
37	DVSS3	——	GND terminal (digital system)
38	DVDD	I	Power supply
39	384fs	O	384fs (16.9344MHz) output
40	PD	I	Power down terminal (Not used, connected to GND)
41	MDATA	I	Mode control data
42	MLCK	I	Data clock for MDATA

■ BLOCK DIAGRAM



AN8374S
IC102
SERVO PROCESSOR

LC35178ML15T
IC302
16K RAM

MN6625
IC301
DIGITAL SIGNAL PROCESSOR

MN6474
IC801
DIGITAL FILTER & D/A CONVERTER

MN15283PJG-3
IC401
SYSTEM CONTROL & FL DRIVE

Q801,802,851
Emphasis drive

8AI5218N
IC871 (1/2)
Headphones amp.
Q871, 872
Muting drive
VR871
HEADPHONES

LM833M63
IC802 (1/2)
BA4558FTI
IC803 (1/2)
Differential amp.
L.P.F
Analog block
PWM
Q803,804
Muting drive
Lch
LINE OUT
Rch

For (E) area.
TOTX174-A
IC303
DIGITAL OUT (OPTICAL)

Q852~854
Muting control

BA4558FTI
IC403 (1/2)
Q353
Motor control
Q351,352
Motor drive
Spindle motor
LOADING MOTOR
Q404,405
Motor drive
Motor control
BA4558FTI
IC403 (1/2)

Reset signal generator
Q406,407

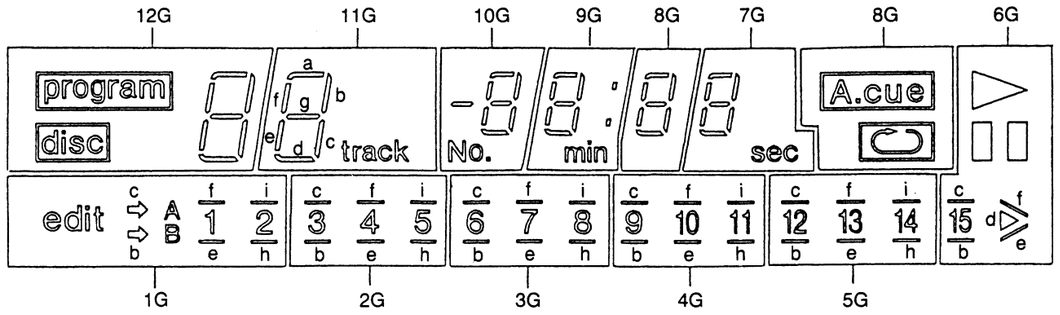
Q401
SYNCHRO EDIT

FL601
FL DISPLAY

Note:
Audio signal

■ INTERNAL CONNECTION OF FL

• Grid connection diagram



• Anode connection table

	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	a	a	a	a	a	a	15	12	9	6	3	edit A B
b	b	b	b	b	b	b	(15)	(12)	(9)	(6)	(3)	(下) →
c	c	c	c	c	c	c	(15)	(12)	(9)	(6)	(3)	(上) →
d	d	d	d	d	d	d	▶	13	10	7	4	1
e	e	e	e	e	e	e	/	(13)	(10)	(7)	(4)	(1)
f	f	f	f	f	f	f	\	(13)	(10)	(7)	(4)	(1)
g	g	g	g	g	g	g	▶	14	11	8	5	2
h	program	track	—	min	↻	sec	❚❚	(14)	(11)	(8)	(5)	(2)
i	disc	-	No.	:	A.cue	-	-	(14)	(11)	(8)	(5)	(2)

• Pin connection

Pin No.	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F 2	F 2	N P	a	N P	N P	b	c	d	e	f	g	h	i	12 G	11 G	N P	N P	N P	N P	10 G	9 G	8 G	7 G	6 G	5 G	4 G	3 G	2 G	N P	N P	N P	1 G	N P	F 1	F 1

■ SCHEMATIC DIAGRAM

(Parts list on pages 41, 42, 48, 49.)

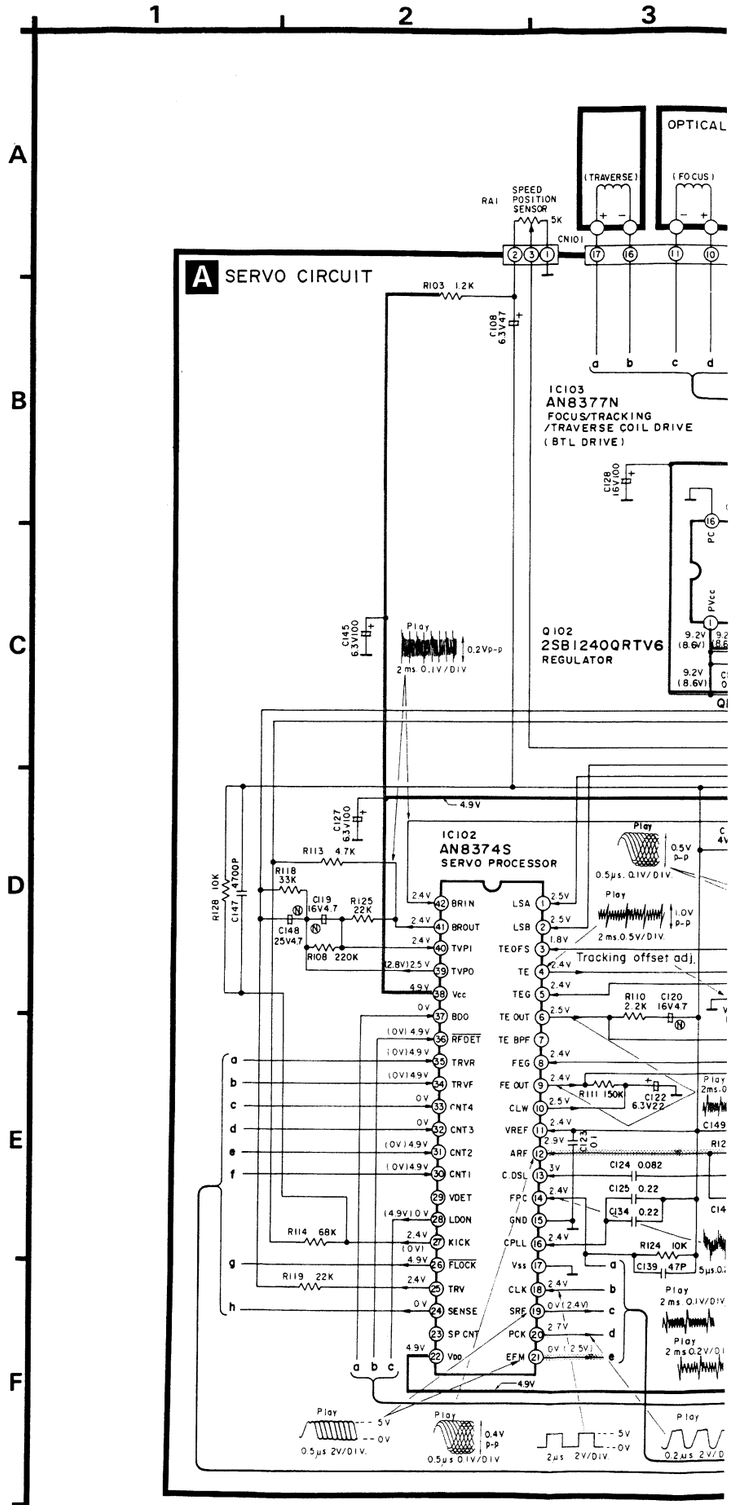
(This schematic diagram may be modified at any time with development of new technology.)

Notes:

- **S1** : Power switch in "**on**" position.
- **S2** : Voltage selector switch. [For (GC, PX) areas.]
- **S101, 102** : Disc holder open/close detection switches.
- **S601** : Disc holder open/close (▲ open/close) switch.
- **S602** : Stop (■ stop) switch.
- **S603** : Repeat (repeat) switch.
- **S604** : Pause (❚❚ pause) switch.
- **S605** : Play (▶ play) switch.
- **S606, 607** : Search (search) switches. [S606: ◀◀ (B), S607: ▶▶ (F)]
- **S608, 609** : Skip (skip) switches. [S608: ⏮ (B), S609: ⏭ (F)]
- **S610** : Time mode select (time mode) switch.
- **S611** : Program (program) switch.
- **S612** : Clear (clear) switch.
- **S613** : Auto cue (auto cue) switch.
- **S614** : Tape side select (side A/B) switch.
- **S615** : Tape length (tape length) switch.
- **S616~626** : Numeric (+10, 0~9) switches. (S616: 1, S617: +10, S618: 2, S619: 3, S620: 4, S621: 5, S622: 6, S623: 7, S624: 8, S625: 9, S626: 0)

- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
  Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
  * The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- −< >−/···< >···: Positive voltage lines and negative voltage lines.
- ▒▒▒▒▒ : audio signal lines.

Caution!
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.



■ SCHEMATIC DIAGRAM

(Parts list on pages 41, 42, 48, 49.)

(This schematic diagram may be modified at any time with development of new technology.)

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- **S606, 607** : Search (search) switches. [S606: ◀◀ (B), S607: ▶▶ (F)]
- **S608, 609** : Skip (skip) switches. [S608: ⏮ (B), S609: ⏭ (F)]
- **S610** : Time mode select (time mode) switch.
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- **S612** : Clear (clear) switch.
- **S613** : Auto cue (auto cue) switch.
- **S614** : Tape side select (side A/B) switch.
- **S615** : Tape length (tape length) switch.
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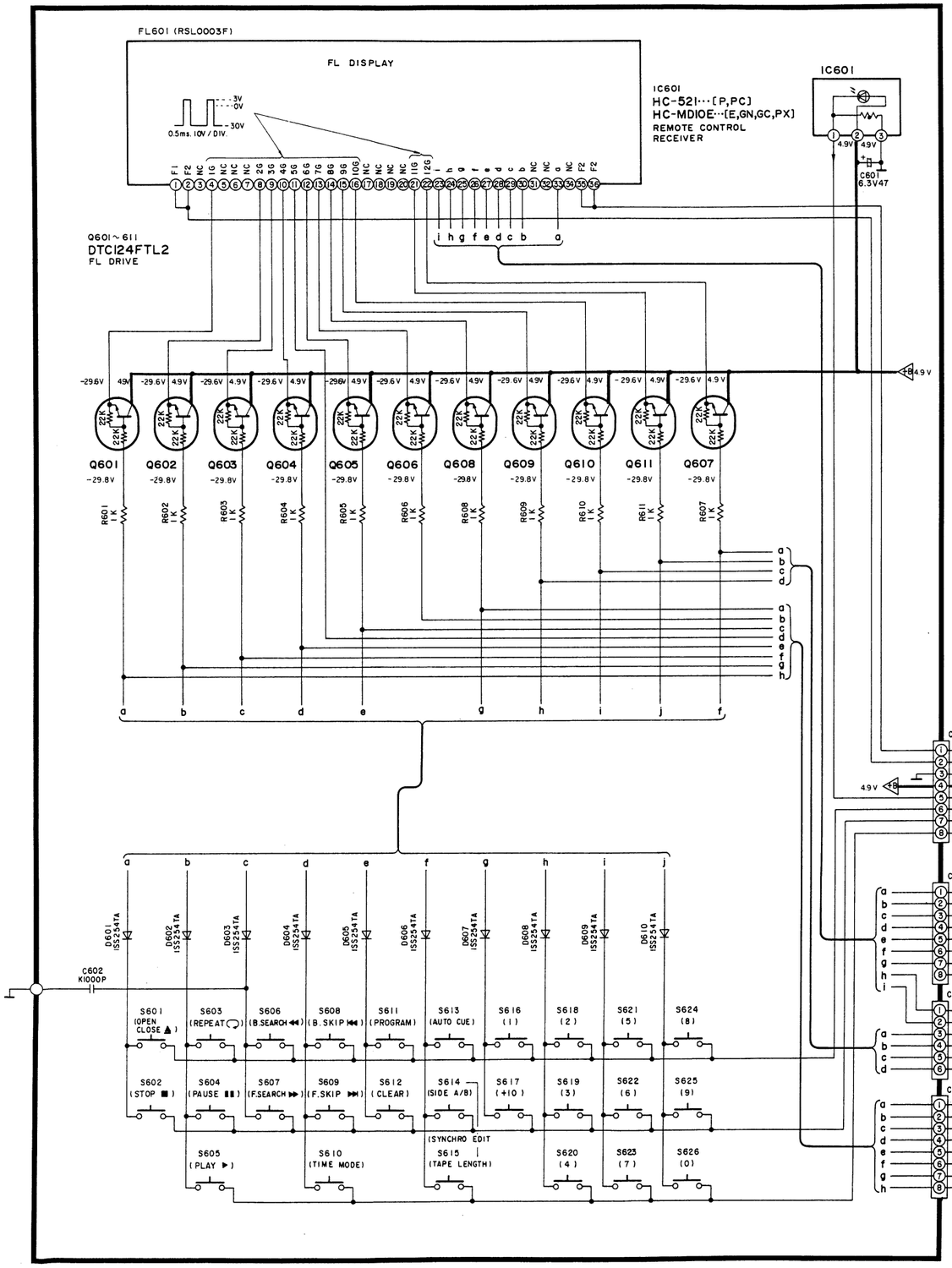
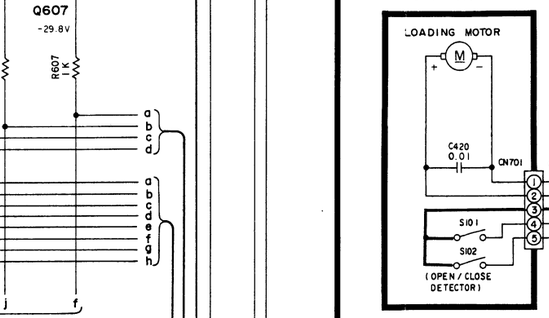
- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
  Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
  * The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- −< >−/···< >···: Positive voltage lines and negative voltage lines.
- ▒▒▒

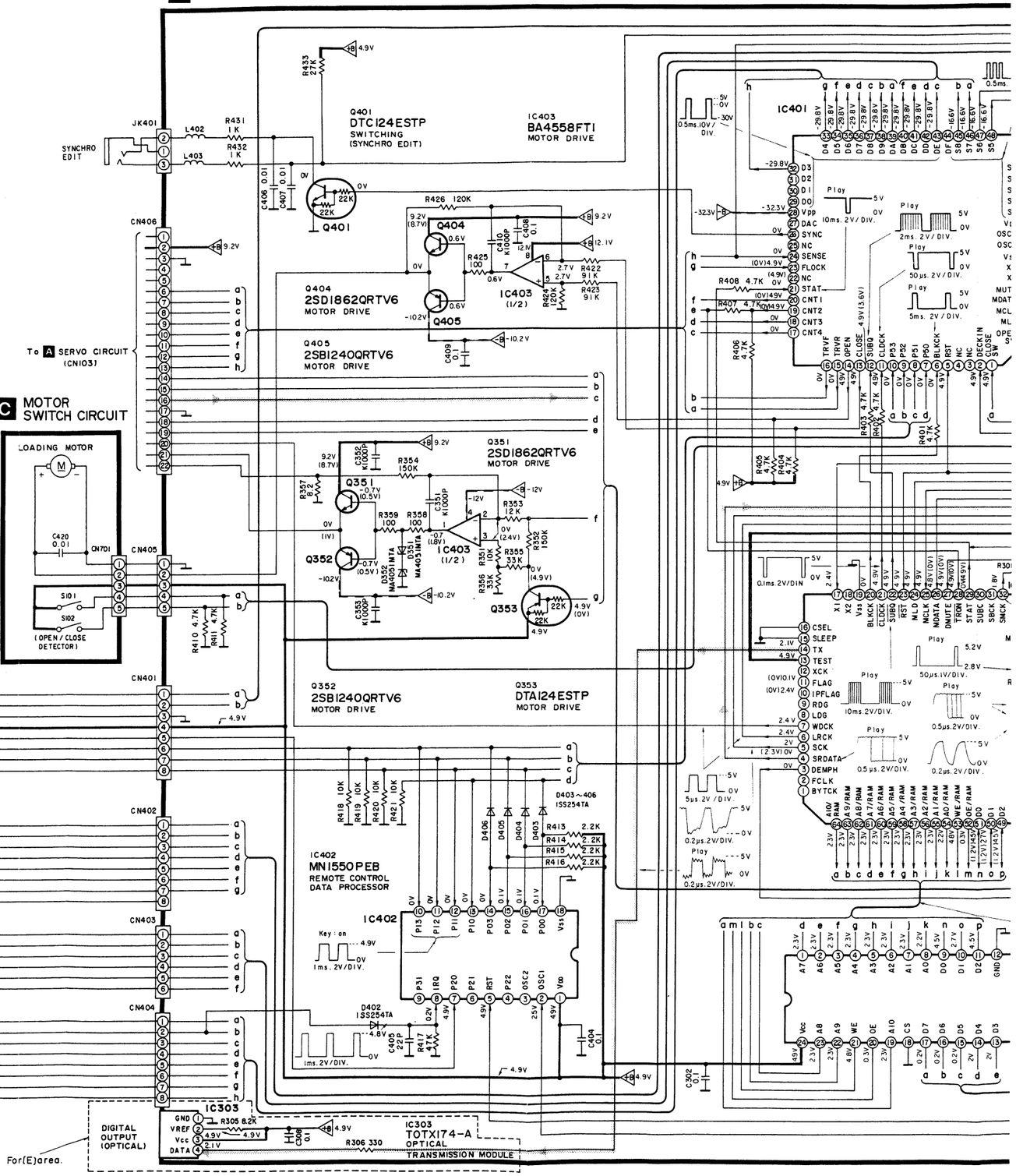
B OPERATION CIRCUIT



C MOTOR SWITCH CIRCUIT



D MAIN CIRCUIT



7 18 19 20 21 22 23 24 25 26

E POWER SUPPLY CIRCUIT For [P, PC] area.

E POWER SUPPLY CIRCUIT For (GC, PX) areas.

E POWER SUPPLY CIRCUIT For (E, GN) areas.

F HEADPHONES CIRCUIT

Q11
2SB1238QSTV6
REGULATOR

Q14
2SC3311QRSTA
REGULATOR

Q12
2SC3311QRSTA
REGULATOR

Q13
2SA1309QRSTA
REGULATOR

IC11
LM2940T5M
REGULATOR

IC401
MN15283PJG-3
SYSTEM CONTROL/
FL DRIVE

Q851
DTA124ESTP
DE-EMPHASIS
CONTROL

IC801
MN6474
DIGITAL FILTER/
D/A CONVERTER

IC802
LM833M63
OP AMP

IC301
MN6625
DIGITAL SIGNAL
PROCESSOR

IC302
LC35178ML15T
16K RAM

IC871
BA15218N
HEADPHONES AMP

Q871,872
2SD1450RSTTA
MUTING

Q801,802
2SC3311QRSTA
SWITCHING
(DE-EMPHASIS)

IC803
BA4558FTI
FILTER AMP

Q803,804
2SD1450RSTTA
MUTING

Q406,407
2SC3311QRSTA
RESET

Q852
DTA124ESTP
MUTING CONT.

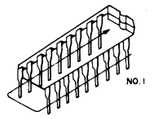
Q853
DTC124ESTP
MUTING CONT.

Q854
DTA114ESTP
MUTING CONT.

JK801
LINE OUT

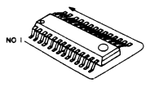
JK871
HEADPHONES

■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



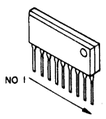
MN15283PJG-3	64 Pin

MN6625	64 Pin
MN6474	42 Pin

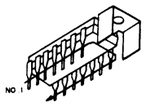


AN8373S	42 Pin	MN1550PEB	18 Pin
AN8374S		LC3517BML15T	24 Pin
BA4558FTI	8 Pin		
LM833M63			

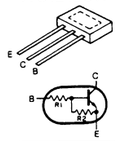
BA15218N	8 Pin



AN8377N	16 Pin



DTC124FTL2,
DTC124ESTP

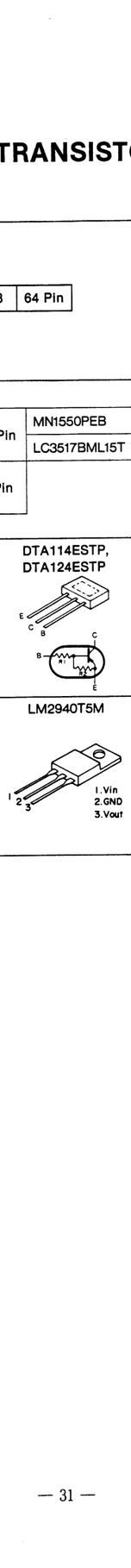


DTA114ESTP,
DTA124ESTP

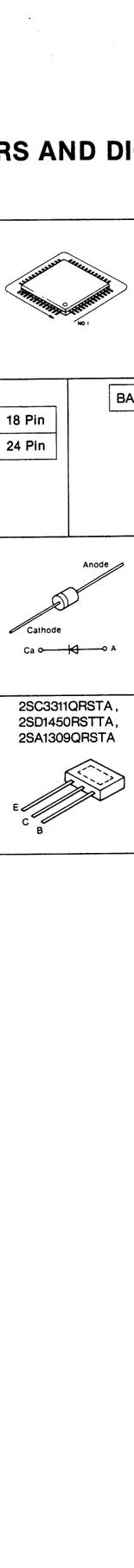
1SS254TA,
SVDS5688GT3

MA4039HTA,
MA4062HTA,
MA4082MTA,
MA4051MTA,
MA4330MTA,
MA4068MTA

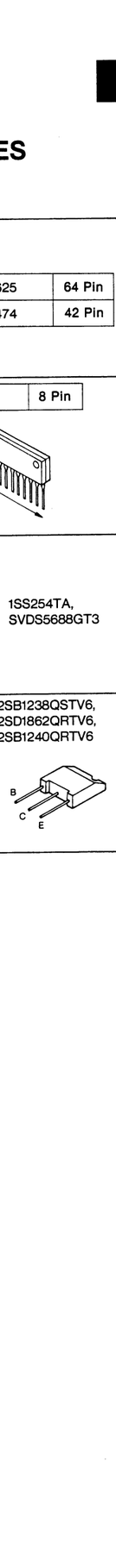
LM2940T5M



2SC3311QRSTA,
2SD1450RSTTA,
2SA1309QRSTA

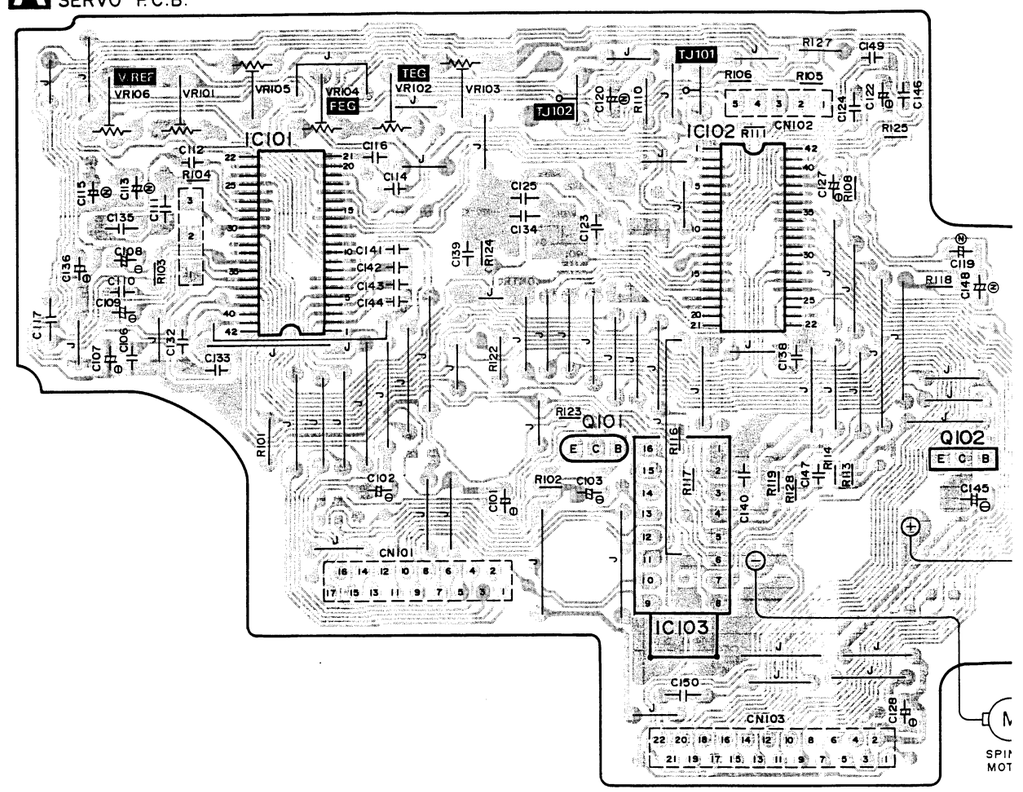


2SB1238QSTV6,
2SD1862QRTV6,
2SB1240QRTV6

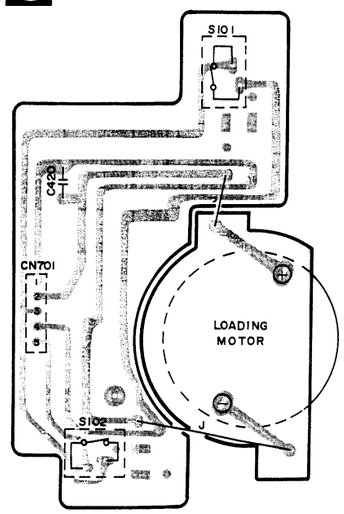


■ PRINTED CIRCUIT BOARDS

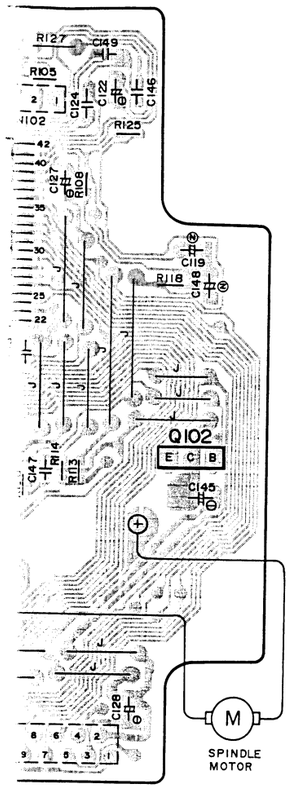
A SERVO P.C.B.



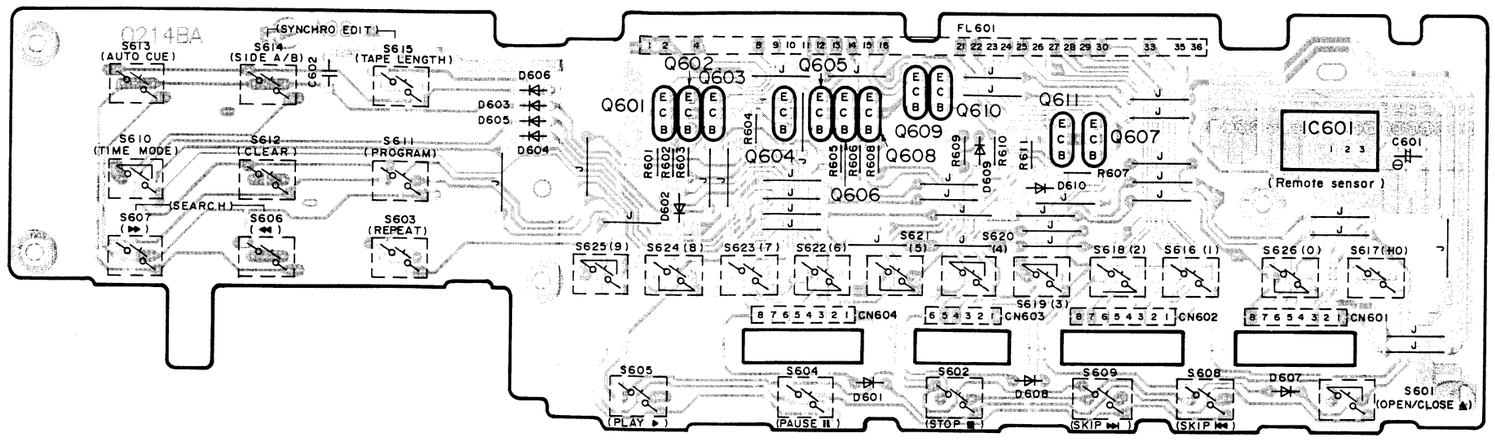
C MOTOR/SWITCH P.C.B.



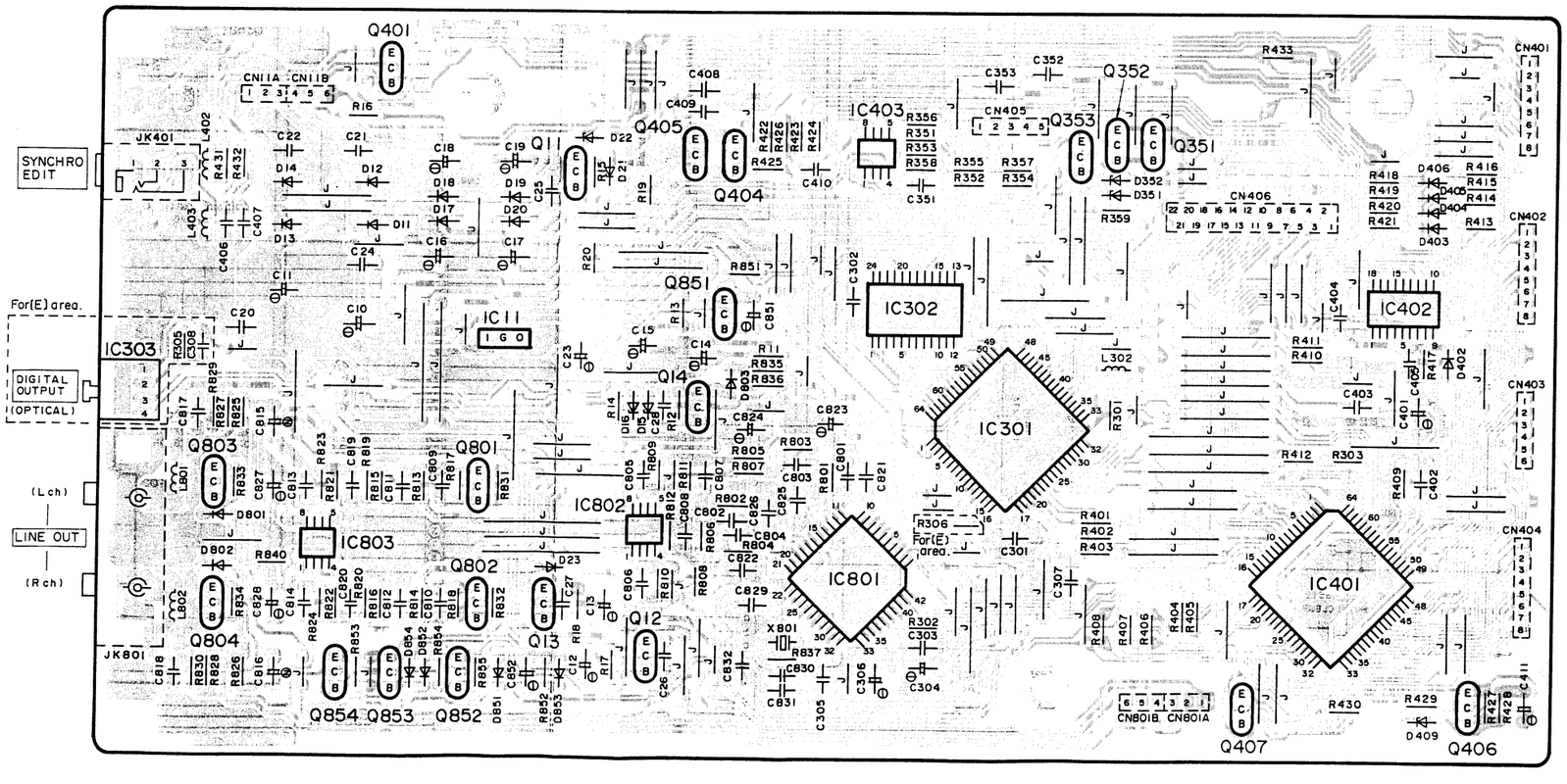
5 6 7 8 9 10 11 12 13 14



B OPERATION P.C.B.

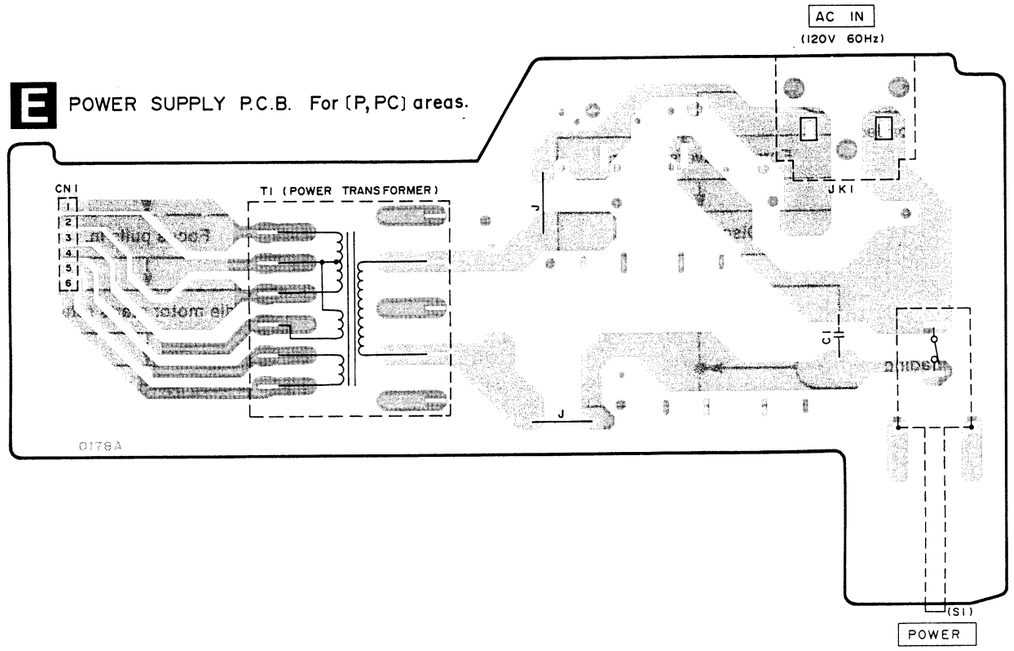


D MAIN P.C.B.

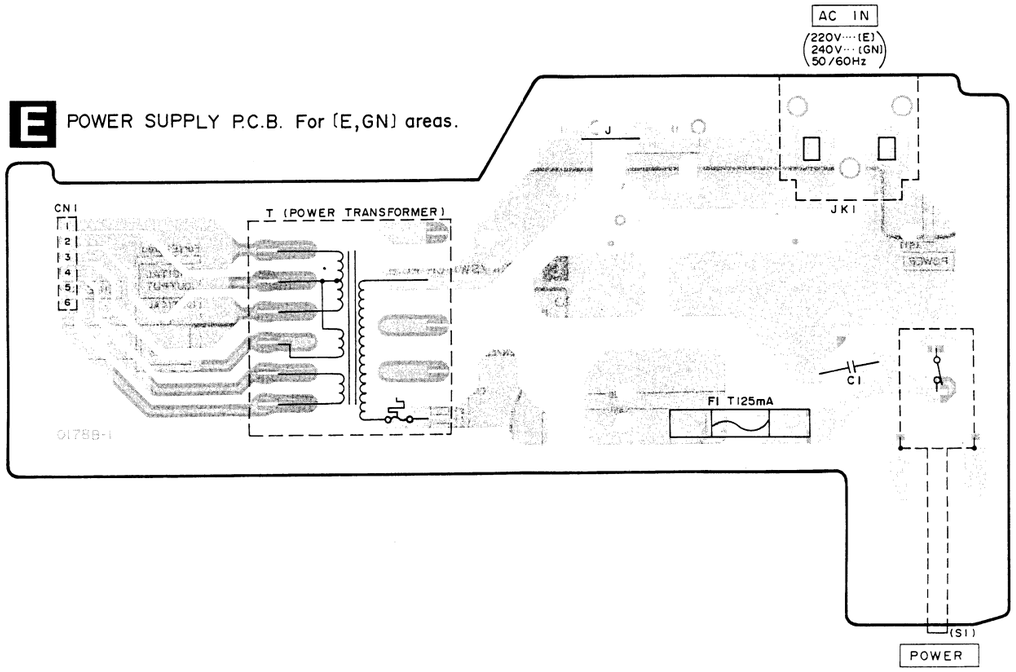


15 16 17 18 19 20 21 22 23 24

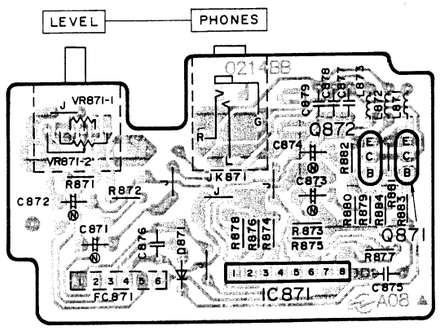
E POWER SUPPLY P.C.B. For [P, PC] areas.



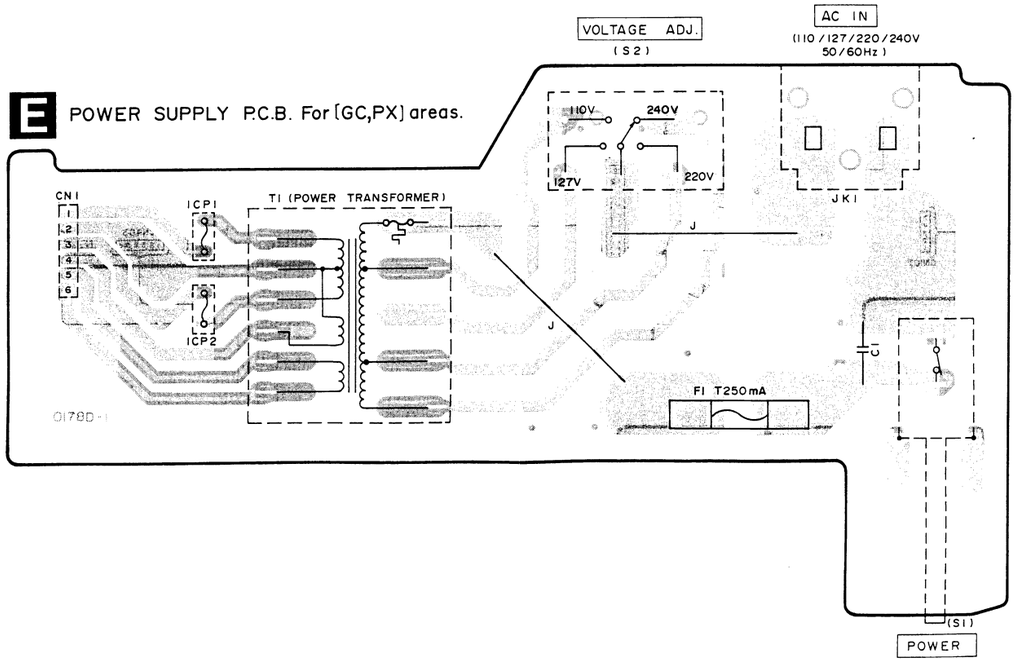
E POWER SUPPLY P.C.B. For [E, GN] areas.



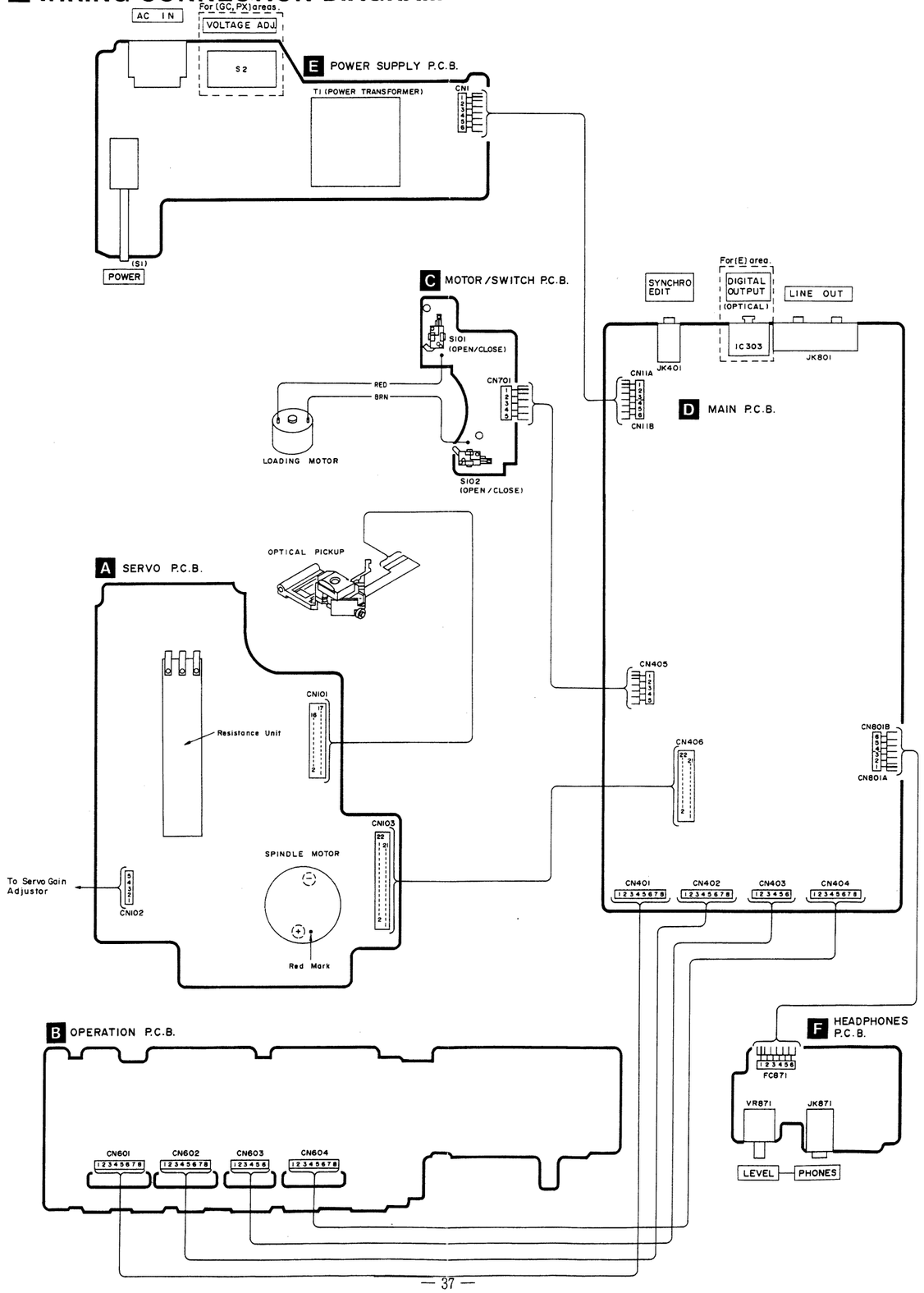
F HEADPHONES P.C.B.



E POWER SUPPLY P.C.B. For [GC, PX] areas.



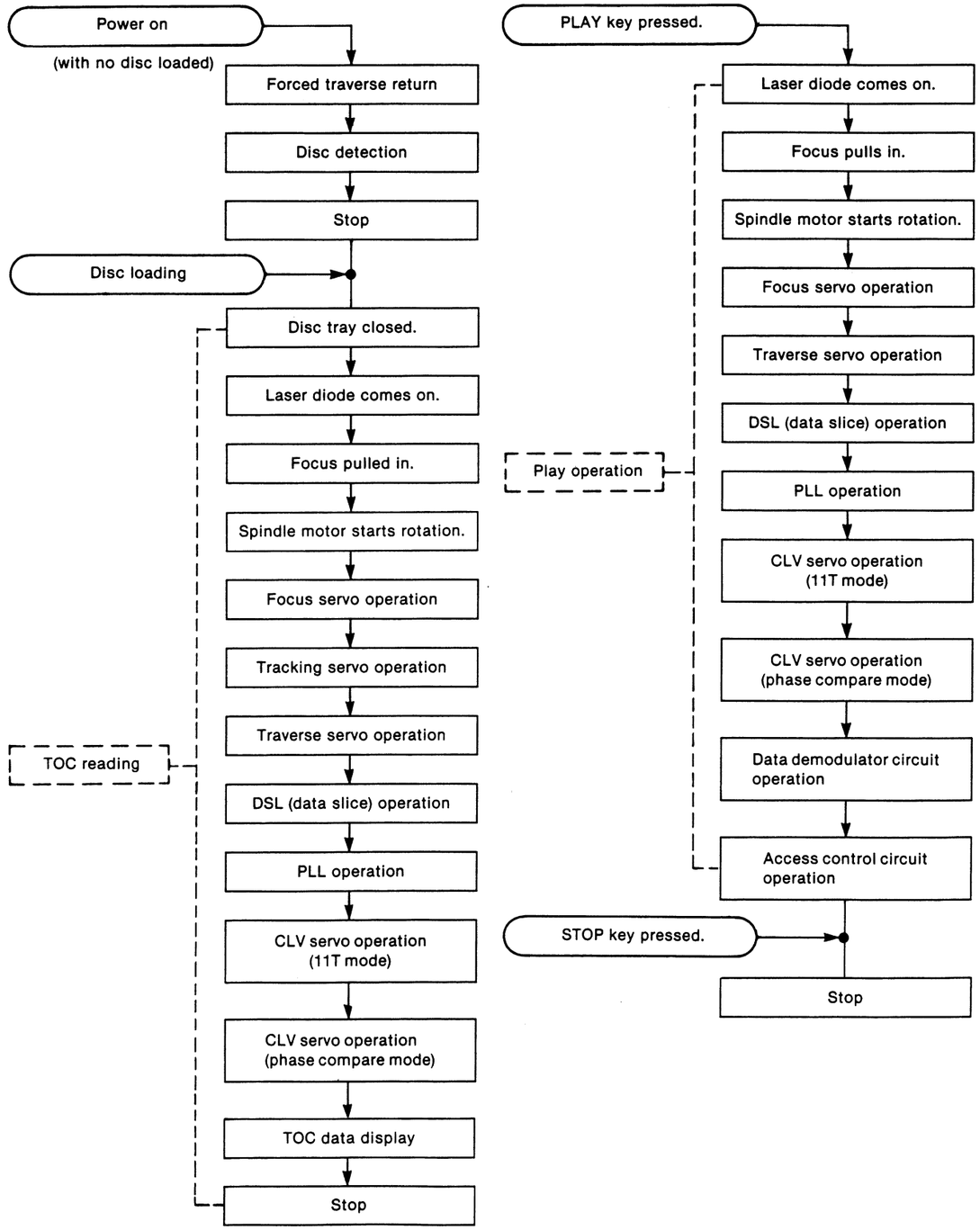
■ WIRING CONNECTION DIAGRAM



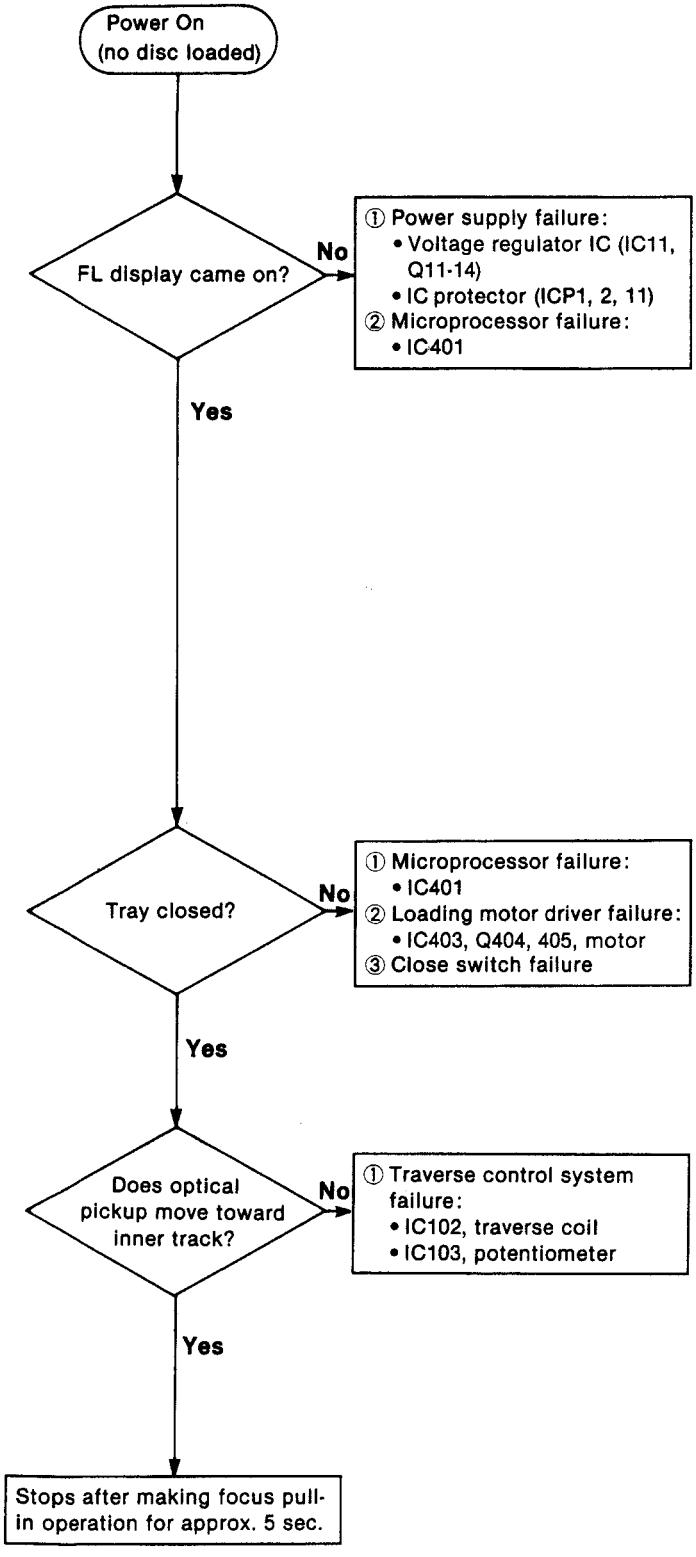
■ TROUBLESHOOTING GUIDE

SL-P370 Operation Sequence Check Sheet

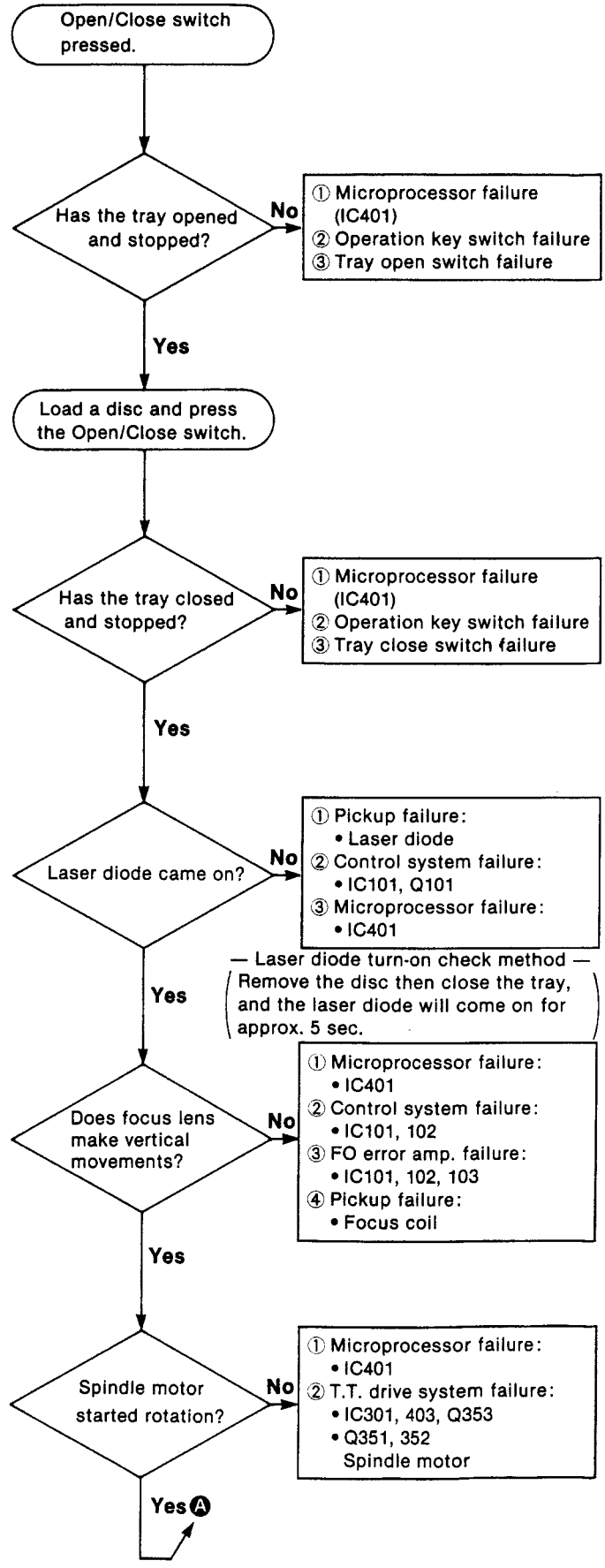
Play Operation Sequence

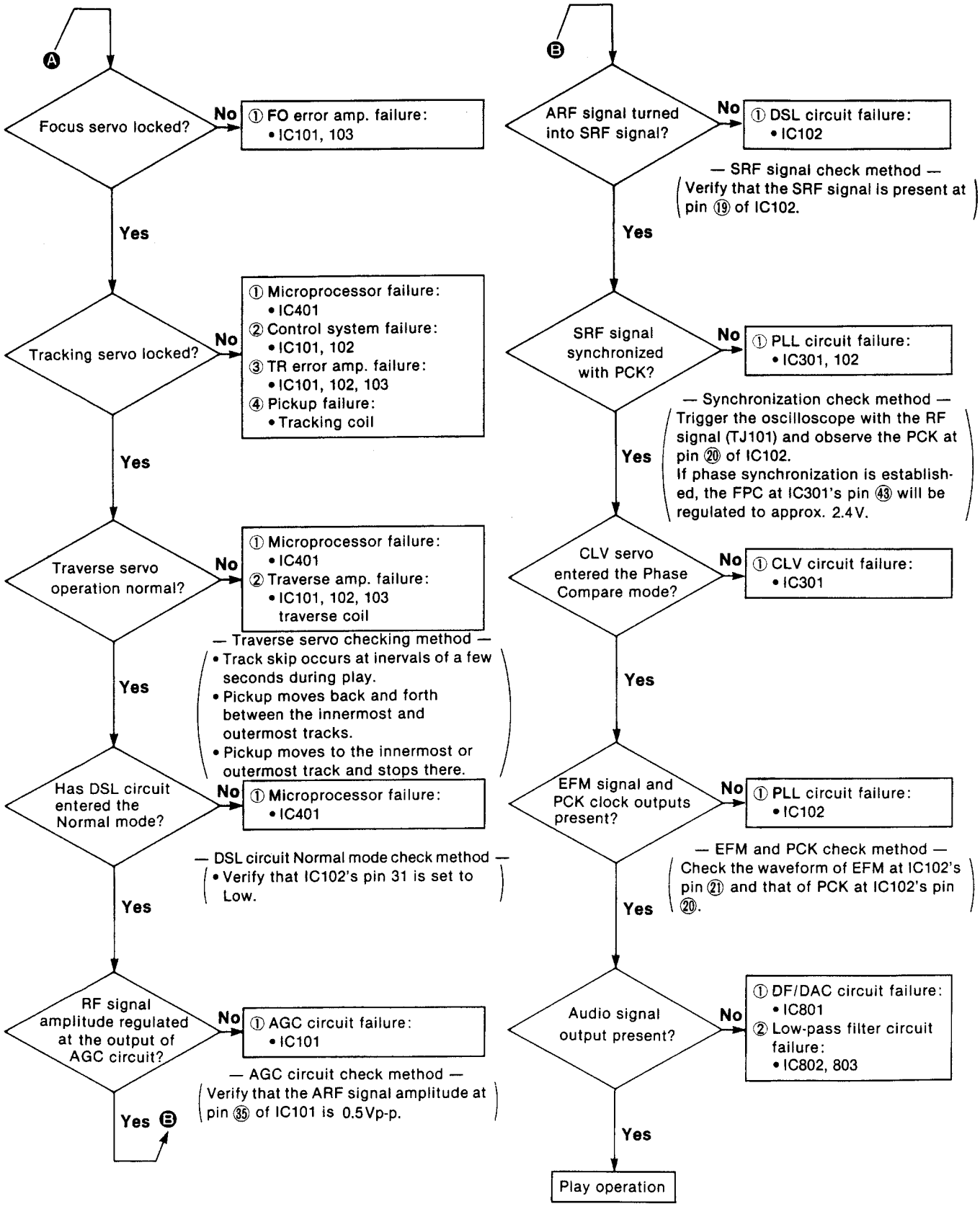


(Operation Sequence Just After Power On)



(TOC Read Operation-PLAY Operation)




Ⓐ
Focus servo locked?
No
① FO error amp. failure:
• IC101, 103
Yes
Tracking servo locked?
No
① Microprocessor failure:
• IC401
② Control system failure:
• IC101, 102
③ TR error amp. failure:
• IC101, 102, 103
④ Pickup failure:
• Tracking coil
Yes
Traverse servo operation normal?
No
① Microprocessor failure:
• IC401
② Traverse amp. failure:
• IC101, 102, 103
traverse coil
— Traverse servo checking method —
• Track skip occurs at inervals of a few seconds during play.
• Pickup moves back and forth between the innermost and outermost tracks.
• Pickup moves to the innermost or outermost track and stops there.
Yes
Has DSL circuit entered the Normal mode?
No
① Microprocessor failure:
• IC401
— DSL circuit Normal mode check method —
• Verify that IC102's pin 31 is set to Low.
Yes
RF signal amplitude regulated at the output of AGC circuit?
No
① AGC circuit failure:
• IC101
— AGC circuit check method —
Verify that the ARF signal amplitude at pin ㉟ of IC101 is 0.5Vp-p.
Yes Ⓑ
Ⓑ
ARF signal turned into SRF signal?
No
① DSL circuit failure:
• IC102
— SRF signal check method —
Verify that the SRF signal is present at pin ⑲ of IC102.
Yes
SRF signal synchronized with PCK?
No
① PLL circuit failure:
• IC301, 102
— Synchronization check method —
Trigger the oscilloscope with the RF signal (TJ101) and observe the PCK at pin ⑳ of IC102.
If phase synchronization is established, the FPC at IC301's pin ㊸ will be regulated to approx. 2.4V.
Yes
CLV servo entered the Phase Compare mode?
No
① CLV circuit failure:
• IC301
Yes
EFM signal and PCK clock outputs present?
No
① PLL circuit failure:
• IC102
— EFM and PCK check method —
Check the waveform of EFM at IC102's pin ㉑ and that of PCK at IC102's pin ⑳.
Yes
Audio signal output present?
No
① DF/DAC circuit failure:
• IC801
② Low-pass filter circuit failure:
• IC802, 803
Yes
Play operation

■ REPLACEMENT PARTS LIST

Notes : * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC11	LM2940T5M	IC, REGULATOR	
IC301	MN6625	IC, DSP	
IC302	LC3517BML15T	IC, 16K RAM	
IC303	TOTX174-A	IC, OPTICAL OUT	(E)
IC401	MN15283PJG-3	IC, SYSTEM CONTROL&FL DRIVE	
IC402	MN1550PEB	IC, REMOTE CONTROL S. P.	
IC403	BA4558F	IC, MOTOR CONTROL	
IC601	HC-521	IC, REMOTE CONTROL RECEIVER	(P, PC)
IC601	HC-MD10E	IC, REMOTE CONTROL RECEIVER	(E, GN, GC, PX)
IC801	MN6474	IC, DIGITAL FILTER&D/A CONV.	
IC802	LM833M63	IC, DIFFERENTIAL AMP	
IC803	BA4558F	IC, L. P. F.	
IC871	BA15218N	IC, HEADPHONES AMP	
		TRANSISTOR(S)	
Q11	2SB1238QSTV6	TRANSISTOR	
Q12	2SC3311A-Q	TRANSISTOR	
Q13	2SA1309A-R	TRANSISTOR	
Q14	2SC3311A-Q	TRANSISTOR	
Q351	2SD1862QRTV6	TRANSISTOR	
Q352	2SB1240-P	TRANSISTOR	
Q353	DTA124EST	TRANSISTOR	
Q401	DTC124ES	TRANSISTOR	
Q404	2SD1862QRTV6	TRANSISTOR	
Q405	2SB1240-P	TRANSISTOR	
Q406, 407	2SC3311A-Q	TRANSISTOR	
Q601-611	DTC124FTL2	TRANSISTOR	
Q801, 802	2SC3311A-Q	TRANSISTOR	
Q803, 804	2SD1450RTA	TRANSISTOR	
Q851, 852	DTA124EST	TRANSISTOR	
Q853	DTC124ES	TRANSISTOR	
Q854	DTA114ESTP	TRANSISTOR	
Q871, 872	2SD1450RTA	TRANSISTOR	
		DIODE(S)	
D11-14	SVDS5688GT3	DIODE	
D15	MA4068M	DIODE	
D16	MA4062-H	DIODE	
D17-20	SVDS5688GT3	DIODE	
D21	MA4330MTA	DIODE	
D22	MA4082MTA	DIODE	
D23	1SS254TA	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
D351, 352	MA4051MTA	DIODE	
D402-406	1SS254TA	DIODE	
D409	MA4039HTA	DIODE	
D601-610	1SS254TA	DIODE	
D801-803	1SS254TA	DIODE	
D851-854	1SS254TA	DIODE	
D871	1SS254TA	DIODE	
		I. C. PROTECTOR(S)	
ICP1, 2	SRUF38	IC PROTECTOR	(GC, PX) ⚠
		VARIABLE RESISTOR(S)	
VR871	EVJCB0F02A14	V. R, HEADPHONES LEVEL	
		COIL(S)	
L302	RLQZP4R7KT-Y	COIL	
L402, 403	RLQZP4R7KT-Y	COIL	
L801, 802	RLQZP4R7KT-Y	COIL	
L871-873	RLQZP2R2KT-Y	COIL	
		FUSE	
F1	XBA2C012TB0	FUSE	(E, GN) ⚠
F1	XBA2C025TB0	FUSE	(GC, PX) ⚠
		TRANSFORMER(S)	
T1	SLTD5K096SC	POWER TRANSFORMER	(P, PC) ⚠
T1	SLTD5K097SE	POWER TRANSFORMER	(E) ⚠
T1	SLTD5K098SG	POWER TRANSFORMER	(GN) ⚠
T1	SLTD5K099SX	POWER TRANSFORMER	(GC, PX) ⚠
		OSCILLATOR(S)	
X801	SVQ49U338S	OSCILLATOR	
		DISPLAY TUBE	
FL601	RSL0003F	DISPLAY TUBE	
		SWITCH(ES)	
S1	ESB8249V	SW, POWER	⚠
S2	SSR187-1	SW, VOLTAGE SELECTOR	(GC, PX) ⚠

Ref. No.	Part No.	Part Name & Description	Remarks
S101	SSPD17-1	SW, LOADING DET.	
S102	SSPD18-1	SW, LOADING DET.	
S601	EVQQTG05R	SW, OPEN/CLOSE	
S602	EVQQTG05R	SW, STOP	
S603	EVQQTG05R	SW, REPEAT	
S604	EVQQTG05R	SW, PAUSE	
S605	EVQQTG05R	SW, PLAY	
S606	EVQQTG05R	SW, B. SEARCH	
S607	EVQQTG05R	SW, F. SEARCH	
S608	EVQQTG05R	SW, B. SKIP	
S609	EVQQTG05R	SW, F. SKIP	
S610	EVQQTG05R	SW, TIME MODE	
S611	EVQQTG05R	SW, PROGRAM	
S612	EVQQTG05R	SW, CLEAR	
S613	EVQQTG05R	SW, AUTO CUE	
S614	EVQQTG05R	SW, SIDE A/B	
S615	EVQQTG05R	SW, EDIT	
S616	EVQQTG05R	SW, NUMERIC 1	
S617	EVQQTG05R	SW, NUMERIC +10	
S618	EVQQTG05R	SW, NUMERIC 2	
S619	EVQQTG05R	SW, NUMERIC 3	
S620	EVQQTG05R	SW, NUMERIC 4	
S621	EVQQTG05R	SW, NUMERIC 5	
S622	EVQQTG05R	SW, NUMERIC 6	
S623	EVQQTG05R	SW, NUMERIC 7	
S624	EVQQTG05R	SW, NUMERIC 8	
S625	EVQQTG05R	SW, NUMERIC 9	
S626	EVQQTG05R	SW, NUMERIC 0	
		CONNECTOR(S) & SOCKET(S)	
CN11	SJT30643-V	CONNECTOR(6P)	
CN401, 402	RJU003K008M1	SOCKET(8P)	
CN403	RJU003K006M1	SOCKET(6P)	
CN404	RJU003K008M1	SOCKET(8P)	
CN405	RJS1A1705	CONNECTOR(5P)	
CN406	SJSD2221	CONNECTOR(22P)	
CN601, 602	RJT003K008M	CONNECTOR(8P)	
CN603	RJT003K006M	CONNECTOR(6P)	
CN604	RJT003K008M	CONNECTOR(8P)	
CN801	SJT30643-V	CONNECTOR(6P)	
		FLAT CABLE	
FC1	RWJ1806090KQ	FLAT CABLE(6P)	
FC871	REE0150	FLAT CABLE(6P)	
		JACK(S)	
JK1	SJSD16	AC INLET	(P, PC, GN) ⚠
JK1	SJS9236	AC INLET	(E, GC, PX) ⚠
JK401	RJJ33T01	SYNCHRO. JACK	

Ref. No.	Part No.	Part Name & Description	Remarks
JK801	RJH3201N	OUTPUT JACK	
JK871	QJA0455ZC	HEADPHONES JACK	
		<SERVO P. C. B>	
		INTEGRATED CIRCUITS	
IC101	AN8373S	IC, SERVO AMP	
IC102	AN8374S	IC, SERVO PROCESSOR	
IC103	AN8377N	IC, B. T. L DRIVE	
		TRANSISTORS<SERVO P. C. B. >	
Q101	2SA1547QSTV2	TRANSISTOR	
Q102	2SB1240QR	TRANSISTOR	
		<SERVO P. C. B>	
		VARIABLE RESISTORS	
VR101	EVND3AA00B14	V. R, BEST EYE ADJ.	
VR102	EVND3AA00B14	V. R, TRACKING GAIN ADJ.	
VR103	EVND3AA00B14	V. R, TRACKING OFFSET ADJ.	
VR104	EVND3AA00B14	V. R, FOCUS GAIN ADJ.	
VR105	EVND3AA00B14	V. R, FOCUS OFFSET ADJ.	
VR106	EVND3AA00B24	V. R, TRACKING BALANCE ADJ.	
		<SERVO P. C. B>	
		MAGNET RESISTOR ELEMENTS	
RA1	EWS7M0A00Q53	RESISTANCE UNIT	

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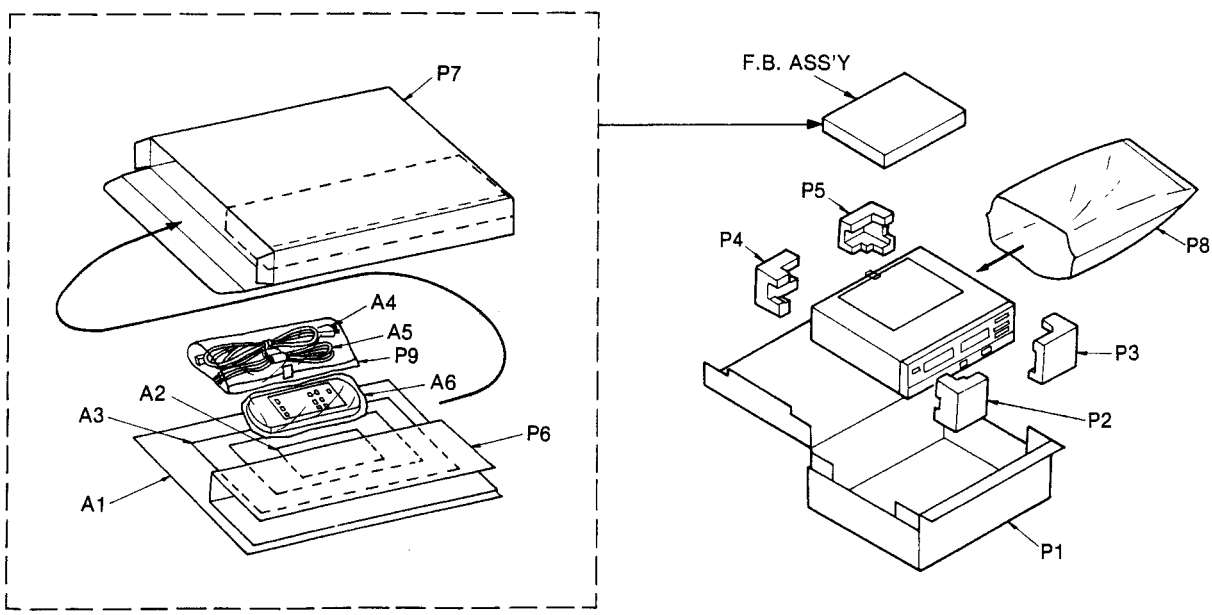
Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RKMD078-1K	CABINET	
2	RGKD168-K	TRAY ORNAMENT	
3	RGRD055A-I	REAR PANEL	(P, PC)
3	RGRD055G-K	REAR PANEL	(E)
3	RGRD055A-J	REAR PANEL	(GN)
3	RGRD055H-L	REAR PANEL	(GC)
3	RFKHLP370PXK	REAR PANEL ASS'Y	(PX)
4	RGUD030	POWER BUTTON	
5	RFKJLP370P-K	CHASSIS ASS'Y	
5-1	RKAD030B	FOOT	
6	RMMD047	POWER BUTTON ROD	
7	RFKGLP370P-K	FRONT PANEL ASS'Y	
7-1	RKWD062	FL ORNAMENT	
7-2	RMRD210	HEADPHONES HOLDER	
8	RGUD245A	MAIN BUTTON	
9	RGUD246	SUB BUTTON	
10	RGUD247A	10 KEY BUTTON	
11	RGWD048	HEADPHONES KNOB	
12	SHE185-2	P. C. B. SUPPORT	
13	RMCD063	HEADPHONES EARTH PLATE	
14	SUSD144	EARTH PLATE	
15	SUWD139-1	FL HOLDER	
16	SJT390	FUSE HOLDER	(E, GN, GC, PX)
17	VJA1034	PROTECTION CAP	(E)
		SCREWS	
N1	SNE2129-1	SCREW	
N2	XTBS3+8JFZ1	SCREW	
N3	XTBS26+8J	SCREW	
N4	XTB3+16JFZ	SCREW	
N5	XTB3+8F	SCREW	
		TRAVERSE DECK	
101	RFKNLP370PAK	DISC TRAY ASS'Y	
102	RMQD044	PIN	
103	SHRD150	ROLLER HOLDER	
104	SDRD12	ROLLER	
105	SUSD83	SPRING	
106	SIRD96-1	LOCK LEVER	
107	SFUMZ15R61	WASHER	
108	SIRD98-3	DISC TRAY	
109	SIRD107-1	TRAY BASE	

Ref. No.	Part No.	Part Name & Description	Remarks
110	SNSD36	SCREW	
111	SIRD40-2	RACK GEAR	
112	SIRD42-5	CLAMPER	
113	SOYD2	CLAMPER YOKE	
114	SOMD4	CLAMPER MAGNET	
115	SIRD51-1	CLAMPER HOLDER	
116	SDOD29-2	RING	
117	SRQA010N04	SPRING	
118	SDOD28-1E	TURNTABLE	
118-1	XXE26D5	SCREW	
119	SISD22-1	TRAVERSE BASE	
120	SHGD148	STOPPER RUBBER	
121	XYN2+C8	SCREW	
122	SHGD153-1	CUSHION RUBBER	
123	SUSD137-1	SPRING(B)	
124	SUSD136-1	SPRING(A)	
125	SUSD145-1	SPRING(C)	
126	SNSD33	SCREW	
127	SJGDRF310T-2	SPINDLE MOTOR	
128	SHRD177-1	LOCK UNIT	
129	SUXD123-1	GUIDE SHAFT	
130	SUWD112	GUIDE SHAFT HOLDER	
131	XTB3+10G	SCREW	
132	SOYD21-E	YOKE(A)	
133	SOYD22	YOKE(B)	
134	SORD38-E	COIL	
135	SOAD70A	OPTICAL PICKUP	
136	SHWD33	WASHER	
137	SORD37	ROLLER	
138	SHWD34	WASHER	
139	SNSD31	SCREW	
140	SHRD176-E	COIL HOLDER	
141	XTB2+5G	SCREW	
142	RFKNLP370PBK	LOADING BASE ASS'Y	
143	SMBD7-2	BELT	
144	XYN26+F7	SCREW	
145	RMGD050	MOTOR RUBBER	
146	SIRD94-E	LOADING MOTOR ASS'Y	
147	SIKD150051F	FLAT CABLE	
148	XTB3+8G	SCREW	
149	EMCS0552MP	CONNECTOR(5P)	
150	SJSD1722M	SOCKET(17P)	
151	SJSD2222M	SOCKET(22P)	
152	SIKD150221-1	FLAT CABLE	
		PACKING MATERIAL	

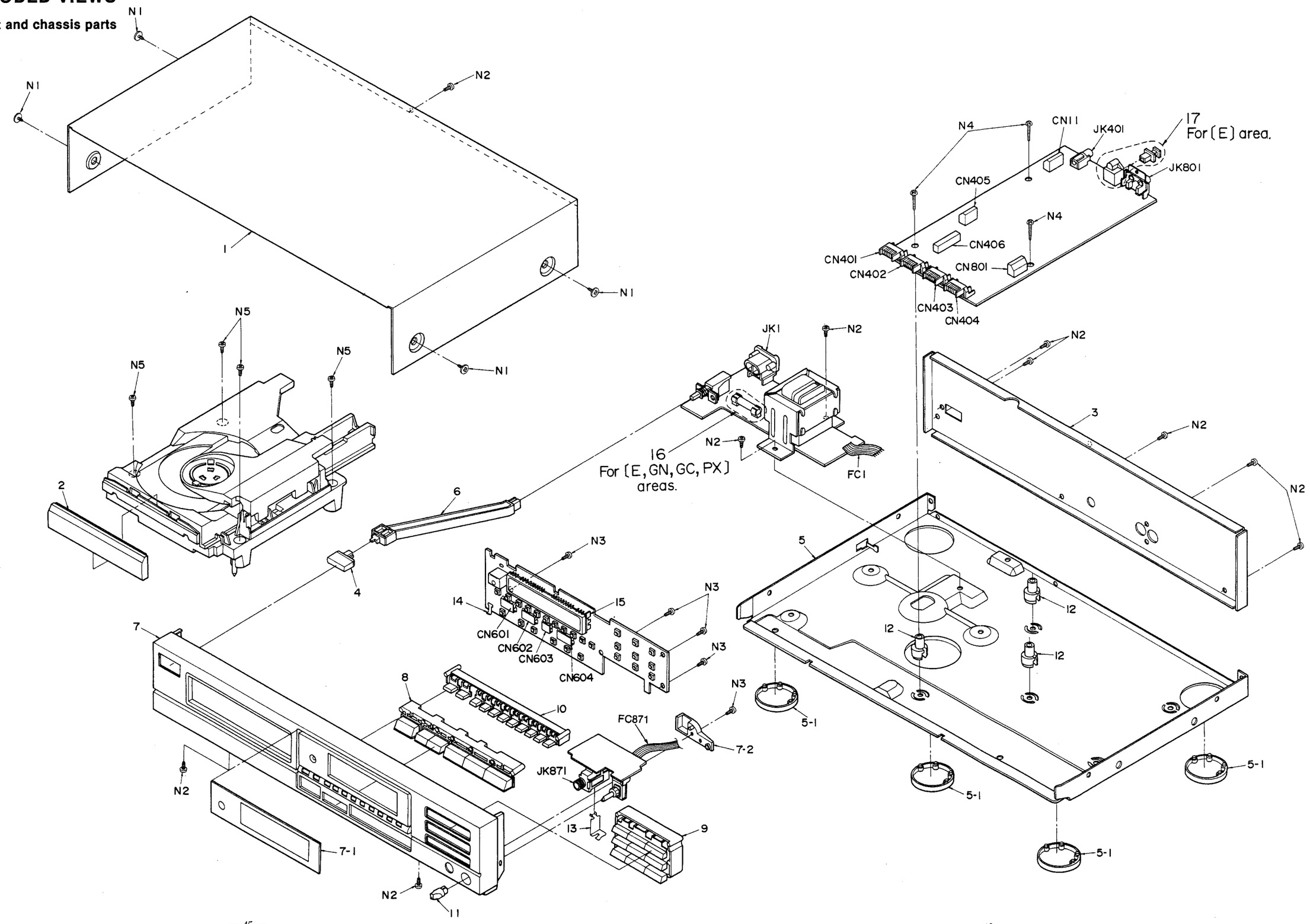
Ref. No.	Part No.	Part Name & Description	Remarks
P1	RPG0411	PACKING CASE	(P, PX)
P1	RPG0412	PACKING CASE	(PC, E, GN, GC)
P2	RPN0224A	CUSHION (F. L.)	
P3	RPN0224B	CUSHION (F. R.)	
P4	RPN0224C	CUSHION (B. L.)	
P5	RPN0224D	CUSHION (B. R.)	
P6	RPN0308	PARTITION	
P7	SPSD152	ACCESSORY BOX	
P8	XZB60X60A01	PROTECTION BAG (UNIT)	
P9	XZB26X17C03	PROTECTION BAG (F. B.)	
		ACCESSORIES	
A1	RQT0379-P	INSTRUCTION MANUAL	(P, PX)
A1	RFKSLP370PCK	INSTRUCTION MANUAL ASS'Y	(PC)
A1	RFKSLP370E-K	INSTRUCTION MANUAL ASS'Y	(E)
A1	RQT0377-G	INSTRUCTION MANUAL	(GN, GC)
A2	SQX7179	WARRANTY CARD	(P)
A2	SQX7183	WARRANTY CARD	(PC)
A2	RQA0013	WARRANTY CARD	(E)
A2	SQX7186	WARRANTY CARD	(GN)
A2	SQX7071-1	WARRANTY CARD	(PX)
A3	SQX9129-1	SERVICENTER LIST	(P)
A3	RQCB0169	SERVICENTER LIST	(E, GN, GC)
A4	SJA175-1	POWER CORD	(P) ⚠
A4	SJA175	POWER CORD	(PC) ⚠
A4	SJA187	POWER CORD	(E) ⚠
A4	SJA173	POWER CORD	(GN) ⚠
A4	RJA0004	POWER CORD	(GC, PX) ⚠
A5	SJP2249-3	PIN CORD	
A6	RAK-SL3002P	REMOTE CONTROL TRANSMITTER	(P, PC)
A6	RAK-SL3006E	REMOTE CONTROL TRANSMITTER	(E, GN, GC, PX)
A7	RKK0008	BATTERY COVER	
A8	SJP9215	AC PLUG ADAPTOR	(GC, PX) ⚠

■ PACKING

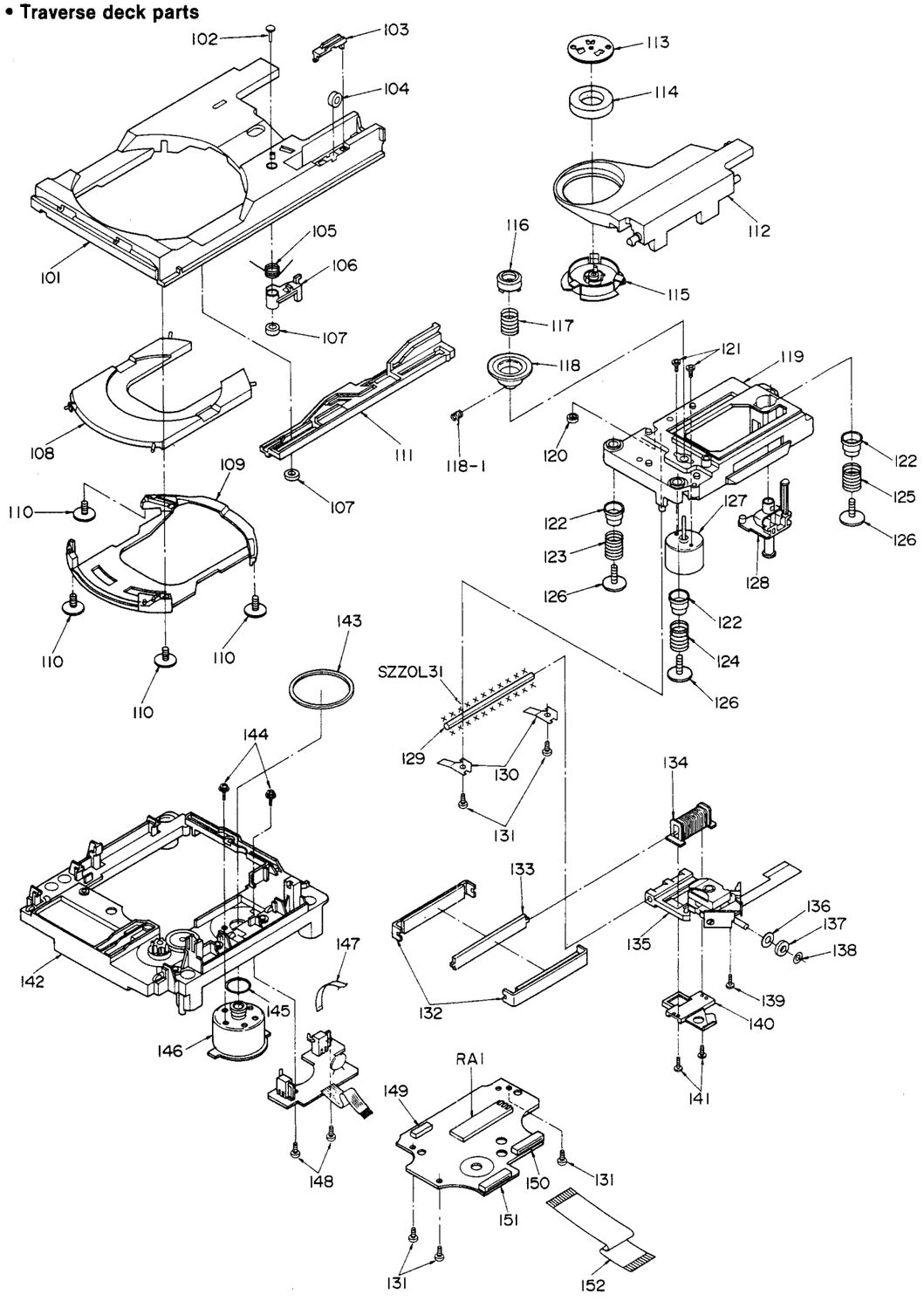


■ EXPLODED VIEWS

• **Cabinet and chassis parts**



• **Traverse deck parts**



Note: When changing mechanism parts, apply the specified grease to the areas marked "× ×" as shown in the drawing.

■ RESISTORS & CAPACITORS

Notes : * Capacity valuse are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R11	ERDS2TJ331T	1/4W 330
R12-14	ERDS2TJ101T	1/4W 100
R15	ERDS2TJ102T	1/4W 1K
R16	ERDS2TJ120T	1/4W 12 ⚠
R17	ERDS2TJ102T	1/4W 1K
R18	ERDS2TJ222T	1/4W 2.2K
R19, 20	ERDS2TJ102T	1/4W 1K
R301	ERDS2TJ102T	1/4W 1K
R302	ERDS2TJ561T	1/4W 560
R303	ERDS2TJ472T	1/4W 4.7K
R305	ERDS2TJ822T	1/4W 8.2K (E)
R306	ERDS2TJ331T	1/4W 330 (E)
R351	ERDS2TJ103T	1/4W 10K
R352	ERDS2TJ154T	1/4W 150K
R353	ERDS2TJ123T	1/4W 12K
R354	ERDS2TJ154T	1/4W 150K
R355, 356	ERDS2TJ333T	1/4W 33K
R357	ERDS2TJ8R2	1/4W 8.2
R358, 359	ERDS2TJ101T	1/4W 100
R401-408	ERDS2TJ472T	1/4W 4.7K
R409	ERDS2TJ104T	1/4W 100K
R410-412	ERDS2TJ472T	1/4W 4.7K
R413-416	ERDS2TJ222	1/4W 2.2K
R417	ERDS2TJ473T	1/4W 47K
R418-421	ERDS2TJ103T	1/4W 10K
R422, 423	ERDS2TJ913T	1/4W 91K
R424	ERDS2TJ124T	1/4W 120K
R425	ERDS2TJ101T	1/4W 100
R426	ERDS2TJ124T	1/4W 120K
R427	ERDS2TJ221T	1/4W 220
R428-430	ERDS2TJ472T	1/4W 4.7K
R431, 432	ERDS2TJ102T	1/4W 1K
R433	ERDS2TJ273T	1/4W 27K
R601-611	ERDS2TJ102T	1/4W 1K
R801-804	ERDS2TJ103T	1/4W 10K
R805-808	ERDS2TJ273T	1/4W 27K
R809-812	ERDS2TJ473T	1/4W 47K
R813, 814	ERDS2TJ102T	1/4W 1K
R815, 816	ERDS2TJ104T	1/4W 100K
R817, 818	ERDS2TJ391T	1/4W 390
R819, 820	ERDS2TJ103T	1/4W 10K
R821, 822	ERDS2TJ123T	1/4W 12K
R823, 824	ERDS2TJ562T	1/4W 5.6K

Ref. No.	Part No.	Values & Remarks
R825, 826	ERDS2TJ471T	1/4W 470
R827, 828	ERDS2TJ473T	1/4W 47K
R829, 830	ERDS2TJ471T	1/4W 470
R831-834	ERDS2TJ102T	1/4W 1K
R835, 836	ERDS2TJ331T	1/4W 330
R837	ERDS2TJ472T	1/4W 4.7K
R840	ERDS2TJ102T	1/4W 1K
R851	ERDS2TJ472T	1/4W 4.7K
R852	ERDS2TJ102T	1/4W 1K
R853	ERDS2TJ471T	1/4W 470
R854	ERDS2TJ102T	1/4W 1K
R855	ERDS2TJ472T	1/4W 4.7K
R871, 872	ERDS2TJ122T	1/4W 1.2K
R873-876	ERDS2TJ183T	1/4W 18K
R877, 878	ERDS2TJ124T	1/4W 120K
R879, 880	ERDS2TJ473T	1/4W 47K
R881, 882	ERDS2TJ101T	1/4W 100
R883, 884	ERDS2TJ222	1/4W 2.2K
		CAPACITORS
C1	ECKWKC103PF2	400V 0.01U ⚠
C10	ECEA1CU222E	16V 2200U
C11	ECEA1CU471B	16V 470U
C12, 13	ECEA1CK101	16V 100U
C14	ECEA1CK330	16V 33U
C15	ECEA1CK470	16V 47U
C16, 17	ECEA1CU331B	16V 330U
C18, 19	ECEA1VU101B	35V 100U ⚠
C20	ECFR1E104ZF5	25V 0.1U
C21, 22	ECKR1H103ZF5	50V 0.01U ⚠
C23	ECEA0JK470B	6.3V 47U
C24	ECFR1E104ZF5	25V 0.1U
C25-28	ECBT1E103ZF	25V 0.01U
C301, 302	ECFR1E104ZF5	25V 0.1U
C303	ECBT1H6R8K5	50V 6.8P
C304	ECEA0JU331B	6.3V 330U
C305	ECFR1E104ZF5	25V 0.1U
C306	ECEA0JK101B	6.3V 100U
C307	ECBT1E103ZF	25V 0.01U
C308	ECFR1E104ZF5	25V 0.1U (E)
C351-353	ECBT1H102KB5	50V 1000P
C401	ECEA0JK470	6.3V 47U
C402	ECFR1E104ZF5	25V 0.1U
C403	ECBT1E103ZF	25V 0.01U
C404	ECFR1E104ZF5	25V 0.1U
C405	ECBT1H220J5	50V 22P
C406, 407	ECBT1E103ZF	25V 0.01U
C408, 409	ECFR1E104ZF5	25V 0.1U

Ref. No.	Part No.	Values & Remarks
C410	ECBT1H102KB5	50V 1000P
C411	ECEA1HK3R3	50V 3.3U
C420	ECKW1H103KB5	50V 0.01U
C601	ECEA0JK470B	6.3V 47U
C602	ECBT1H102KB5	50V 1000P
C801-804	ECBT1H680J5	50V 68P
C805-808	ECBT1H470J5	50V 47P
C809, 810	ECQM1H333KF	50V 0.033U
C811, 812	ECQM1H102KF3	50V 1000P
C813, 814	ECBT1H101KB5	50V 100P
C815, 816	ECEA1AN220S	10V 22U
C817, 818	ECBT1H102KB5	50V 1000P
C819, 820	ECBT1H471KB5	50V 470P
C821, 822	ECFR1E104ZF5	25V 0.1U
C823, 824	ECEA0JU331B	6.3V 330U
C825, 826	ECFR1E104ZF5	25V 0.1U
C827, 828	ECEA1CK100B	16V 10U
C829	ECFR1E104ZF5	25V 0.1U
C830, 831	ECBT1H5R6K5	50V 5.6P
C832	ECBT1E103ZF	25V 0.01U
C851	ECEA1CK100B	16V 10U
C852	ECEA0JU471B	6.3V 470U
C871, 872	ECEA1AKN100B	10V 10U
C873, 874	ECEA1AKN470B	10V 47U
C875-879	ECBT1E103ZF	25V 0.01U
		RESISTORS<SERVO P.C.B.>
R101	ERDS2TJ471	1/4W 470
R102	ERJ6GEYJ120V	1/10W 12
R103	ERJ6GEYJ122	1/10W 1.2K
R104	ERJ6GEYJ471	1/10W 470
R105, 106	RRJ6GCJ102TE	1/6W 1K
R108	ERJ6GEYJ224V	1/10W 220K
R110	ERDS2TJ222	1/4W 2.2K
R111	ERJ6GEYJ154V	1/10W 150K
R113	ERJ6GEYJ472V	1/10W 4.7K
R114	ERJ6GEYJ683V	1/10W 68K
R116	ERJ6GEYJ332V	1/10W 3.3K
R117	ERJ6GEYJ123	1/10W 12K
R118	ERJ6GEYJ333V	1/10W 33K
R119	RRJ6GCJ223TE	1/6W 22K
R122	ERDS2TJ104	1/4W 100K
R123	ERJ6GEYJ470V	1/10W 47
R124	RRJ6GCJ103TE	1/6W 10K
R125	RRJ6GCJ222TE	1/6W 2.2K
R127	ERDS2TJ681	1/4W 680
R128	RRJ6GCJ103TE	1/6W 10K

Ref. No.	Part No.	Values & Remarks
		CAPACITORS<SERVO P. C. B>
C101	ECEA1CKS220I	16V 22U
C102	ECEA1HKS010I	50V 1U
C103	ECEA1CKS220I	16V 22U
C106	RCUV1E104ZF	25V 0.1U
C107	ECEA0GKS101I	4V 100U
C108	ECEA0JKS470I	6.3V 47U
C109	ECEA1HKS010I	50V 1U
C110	RCUV1H681KB	50V 680P
C111	ECUV1C224KR	16V 0.22U
C112	RCUV1H331KB	50V 330P
C113	ECEA1HSN010I	50V 1U
C114	RCUV1E333KB	25V 0.033U
C115	ECEA1HSN010I	50V 1U
C116	RCUV1E333KB	25V 0.033U
C117	ECBT1H102KB5	50V 0.001U
C119, 120	ECEA1CKN4R7I	16V 4.7U
C122	ECEA0JKS220I	6.3V 22U
C123	RCUV1E104ZF	25V 0.1U
C124	ECUV1E823KB	25V 0.082U
C125	ECUV1C224KR	16V 0.22U
C127	ECEA0JKF101I	6.3V 100U
C128	ECEA1CKA101I	16V 100U
C132	ECUV1E104KB	25V 0.1U
C133	RCUV1H330KC	50V 33P
C134, 135	ECUV1C224KR	16V 0.22U
C136	ECEA0GKS101I	4V 100U
C138	RCUV1E104ZF	25V 0.1U
C139	RCUV1H470KC	50V 47P
C140	RCUV1E103KB	25V 0.01U
C141-144	RCUV1H470KC	50V 47P
C145	ECEA0JKF101I	6.3V 100U
C146	RCUV1H181KC	50V 180P
C147	RCUV1H472KB	50V 4700P
C148	ECEA1ESN4R7I	25V 4.7U
C149	RCUV1E104ZF	25V 0.1U
C150	RCUV1E103KB	25V 0.01U

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